This is a digital copy of a book that was preserved for generations on library shelves before it was carefully scanned by Google as part of a project to make the world's books discoverable online.

It has survived long enough for the copyright to expire and the book to enter the public domain. A public domain book is one that was never subject to copyright or whose legal copyright term has expired. Whether a book is in the public domain may vary country to country. Public domain books are our gateways to the past, representing a wealth of history, culture and knowledge that's often difficult to discover.

Marks, notations and other marginalia present in the original volume will appear in this file - a reminder of this book's long journey from the publisher to a library and finally to you.

Usage guidelines

Google is proud to partner with libraries to digitize public domain materials and make them widely accessible. Public domain books belong to the public and we are merely their custodians. Nevertheless, this work is expensive, so in order to keep providing this resource, we have taken steps to prevent abuse by commercial parties, including placing technical restrictions on automated querying.

We also ask that you:

+ *Make non-commercial use of the files* We designed Google Book Search for use by individuals, and we request that you use these files for personal, non-commercial purposes.

+ *Refrain from automated querying* Do not send automated queries of any sort to Google's system: If you are conducting research on machine translation, optical character recognition or other areas where access to a large amount of text is helpful, please contact us. We encourage the use of public domain materials for these purposes and may be able to help.

+ *Maintain attribution* The Google "watermark" you see on each file is essential for informing people about this project and helping them find additional materials through Google Book Search. Please do not remove it.

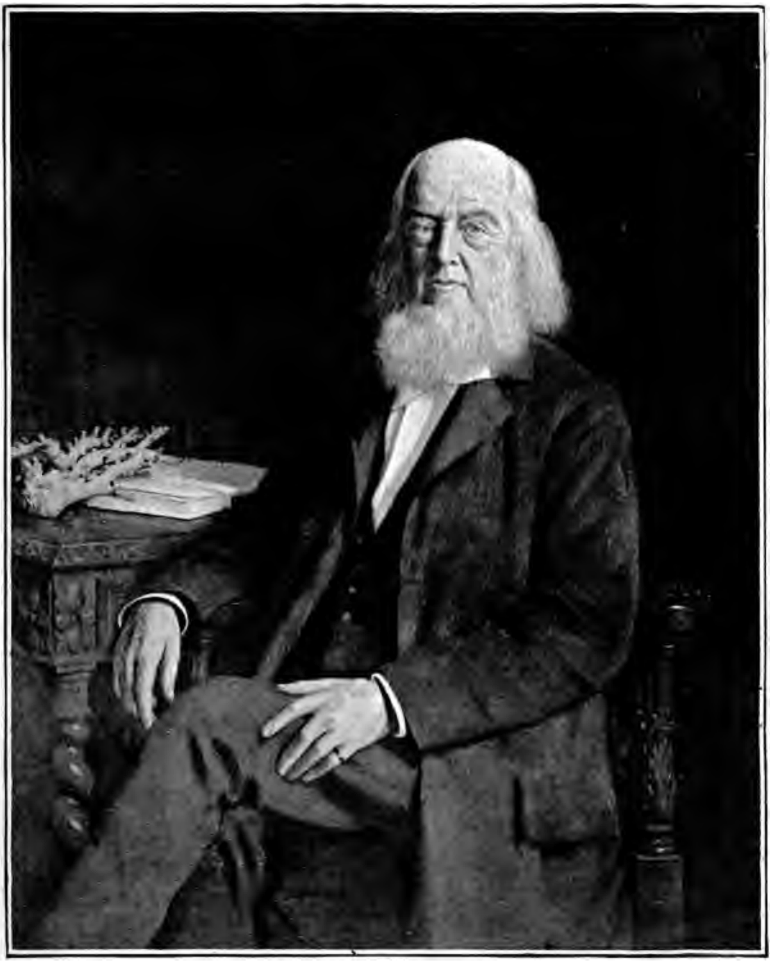
+ *Keep it legal* Whatever your use, remember that you are responsible for ensuring that what you are doing is legal. Do not assume that just because we believe a book is in the public domain for users in the United States, that the work is also in the public domain for users in other countries. Whether a book is still in copyright varies from country to country, and we can't offer guidance on whether any specific use of any specific book is allowed. Please do not assume that a book's appearance in Google Book Search means it can be used in any manner anywhere in the world. Copyright infringement liability can be quite severe.

About Google Book Search

Google's mission is to organize the world's information and to make it universally accessible and useful. Google Book Search helps readers discover the world's books while helping authors and publishers reach new audiences. You can search through the full text of this book on the web at `http://books.google.com/`

062
L776

LELAND·STANFORD·JVNIOR·VNIVERSITY



REV. HENRY HUGH HIGGINS, M.A.

FROM THE PORTRAIT BY R. E. MORRISON,
PRESENTED TO THE FREE PUBLIC MUSEUM BY
THOMAS HIGGIN, ESQ., F.L.S.

[illegible], M.A.

[illegible]

[illegible]

[illegible]

PROCEEDINGS

OF THE

LITERARY AND PHILOSOPHICAL SOCIETY

OF

LIVERPOOL,

DURING THE

EIGHTY-THIRD SESSION, 1893-94.

No. XLVIII.

STANFORD LIBRARY

LONDON:
LONGMANS, GREEN & CO.
LIVERPOOL:
D. MARPLES & CO., LORD STREET.

1894.

The Authors have revised their Papers.

The Authors alone are responsible for facts and opinions.

The Society exchanges Proceedings with other publishing bodies, through the Librarian, from whom back numbers may be obtained.

271425

CONTENTS.

PAGE.
LIST OF PRESIDENTS iv
COUNCIL v
LIST OF ORDINARY MEMBERS vi
" HONORARY MEMBERS xv
" CORRESPONDING MEMBERS xvii
" ASSOCIATES xix
DONATIONS TO THE LIBRARY xx
BALANCE SHEET xxv
ANNUAL MEETING—REPORT xxvii
MEETINGS ORDINARY xxix
" EXTRAORDINARY xxxi

PAPERS PRINTED.

Principal RENDALL, M.A.—"Prometheus, Old and New" 1
Sir EDWARD RUSSELL.—"In Memory of Henry Hugh Higgins" 35
Rev. JOHN SEPHTON, M.A.—"A Translation of the Saga of Frithiof the Fearless" 69
Professor R. J. HARVEY GIBSON, M.A., F.L.S., F.R.S.E.—"The Mushroom Beds of the South American Ants" 99
Mr. J. MURRAY MOORE, M.D., F.R.G.S., F.R.C.I.—"Recent Socialistic and Labour Legislation in New Zealand" 107
Mr. JOHN NEWTON, M.R.C.S.—"Recent Discoveries as to the Origin and Early History of the Human Race, contrasted with the old ideas" 135
Mr. R. C. JOHNSON, F.R.A.S.—"The New Astronomy: an Account of Astro-Photography" 161
Mr. ROBERT F. GREEN.—"The place of Realism in Art" 177
Mr. J. BIRKBECK NEVINS, M.D., Lond.—"Account of the 'Fazakerley Cottage Homes,' near Liverpool... 195

LIST OF PRESIDENTS

FROM THE FOUNDATION OF THE SOCIETY IN 1812.

1812	Rev. Theophilus Houlbrooke.
1817	William Roscoe.
1831	Thomas Stewart Traill, M.D.
1833	Joseph Brooks Yates, F.S.A.
1839	Rev. James Martineau, LL.D.
1840	Rev. Thos. Tattershall, D.D.
1843	Joseph Brooks Yates, F.S.A.
1846–7, 47–8, 48–9	Rev. James Booth, LL.D., F.R.S.
1849–50, 50–1, 51–2	Joseph Brooks Yates, F.S.A.
1852–3, 53–4, 54–5	Joseph Dickinson, M.A., M.D., F.R.S.
1855–6	Robert M'Andrew, F.R.S., F.L.S.
1856–7, 57–8, 58–9	Thomas Inman, M.D.
1859–60, 60–1, 61–2	Rev. Henry Hugh Higgins, M.A.
1862–3	William Ihne, Ph.D.
1863–4, 64–5, 65–6	James A. Picton, F.S.A.
1866–7, 67–8, 68–9	Rev. C. D. Ginsburg, LL.D.
1869–70, 70–1, 71–2	J. Birkbeck Nevins, M.D.
1872–3, 73–4, 74–5	Albert Julius Mott, F.G.S.
1875–6, 76–7	James A. Picton, F.S.A.
1877–8, 78–9	John J. Drysdale, M.D., M.R.C.S.
1879–80, 80–1	Edward R. Russell.
1881–2, 82–3	Edward Davies, F.C.S., F.I.C.
1883–4, 84–5	Richard Steel.
1885–6, 86–7	William Carter, LL.B., M.D., B.Sc.
1887–8, 88–9	James Birchall.
1889–90	Rev. Henry Hugh Higgins, M.A.
1890–1, 91–2	B. L. Benas, J.P.
1892–3, 93–4	Principal Rendall, M.A.

SESSION LXXXIII, 1893-94.

President:

Principal Rendall, M.A.

Ex-Presidents:

Rev. James Martineau, LL.D.
William Ihne, Ph.D.
Rev. C. D. Ginsburg, LL.D.
John Birkbeck Nevins, M.D., Lond.
Albert Julius Mott, F.G.S.
Sir Edward Russell.
Edward Davies, F.C.S., F.I.C.
Richard Steel.
William Carter, LL.B., M.D., B.Sc., Univ. Lond., F.R.C.P., Lond.
James Birchall.
B. L. Benas, J.P.

Vice-Presidents:

John Newton, M.R.C.S.
R. C. Johnson, F.R.A.S.
Chas. J. English.

Honorary Treasurer:

Frederick W. Edwards, M.S.A.

Honorary Secretary:

J. Maxwell McMaster.

Honorary Librarian:

R. McLintock.

Council:

W. Watson Rutherford.
R. J. Lloyd, M.A., D.Lit.
Mrs. Sephton.
Josiah Marples.
J. W. Thompson, B.A.
Robert F. Green.
H. Longuet Higgins.
George Highfield Morton, F.G.S.
H. Percy Boulnois, M.Inst.C.E.
A. Theodore Brown.
John W. Ellis, M.B., F.E.S.
Henry Harvey, M.B.
Alfred Hughes, M.A.
George Lamb.

ORDINARY MEMBERS

ON THE SOCIETY'S ROLL AT THE CLOSE OF THE 83rd SESSION.

Corrected to April, 1894.

Life Members are Marked with an Asterisk.

Nov.	12, 1888	Addinsell, S. A., 63 *Lord-street*
Nov.	1, 1880	Allen, Francis B., 53 *Newsham-drive, Newsham Park*
Nov.	12, 1877	Allman, G. W., *Penkett-road, Liscard*
Nov.	12, 1880	Armour, Rev. Canon S. C., M.A., Merchant Taylors' School, *Crosby*
Nov.	18, 1889	Armstrong, Rev. R. A., B.A., 5 *Marmion-road, Sefton Park*
Oct.	31, 1892	Bailey, John L., B.A., 204 *Lodge-lane*
Nov.	13, 1876	Ball, Geo. Henry, 15 *Gambier-terrace, Hope-street*
Feb.	19, 1894	Bateson, Harold D., M.A., *Ashleigh, Woolton*
Dec.	10, 1866	Benas, Baron Louis, 5 *Prince's-avenue*, Ex-President
Jan.	9, 1882	Benas, Phineas A., 5 *Prince's-avenue*
Feb.	6, 1882	Birchall, Charles, *Church-street, Egremont*
Jan.	25, 1864	Birchall, James, *Westminster-road*, Ex-President
Jan.	25, 1886	Beckett, G., 31B *Hope-street*
Oct.	30, 1893	Bouch, John, 28 *James-street*
April	4, 1892	Boulnois, H. Percy, M.Inst.C.E., *Devonshire-road, Prince's Park*
Nov.	14, 1892	Brodersen, Claus, *Heatherlea, Cressington Park, Aigburth*

Oct.	31, 1892	Brown, A. Theodore, *The Nunnery, St. Michael's Hamlet*
Dec.	1, 1890	Brown, John S., 274 *Upper Parliament-street*
Oct.	18, 1869	Brown, J. Campbell, D.Sc., F.C.S., Professor of Chemistry, *University College*
Nov.	14, 1892	Bulley, Arthur K., *West Kirby*
*May	1, 1848	Byerley, Isaac, F.L.S., F.R.C.S., *Dingle-lane*
Jan.	7, 1884	Calder, Miss Fanny, 49 *Canning-street*
Oct.	19, 1891	Callie, J. W. S., *Massey Park, Liscard*
Nov.	3, 1862	Cameron John, M.D., F.R.C.P., Physician to the Royal Southern Hospital, 4 *Rodney-st.*
Jan.	11, 1892	Carey, F. Stanton, M.A., *University College*
March	4, 1872	Carter, W., M.D., B.Sc., LL.B. (Lond.), F.R.C.P. (Lond)., 78 *Rodney-street*, Ex-President
Jan.	29, 1894	Case, R. H., B.A., 60 *Canning-street*
Dec.	2, 1861	Chadburn, William, 15 *James-street*
Oct.	16, 1893	Chilton, Thos., J.P., *Aigburth-drive, Sefton Park*
Jan.	26, 1891	Clementson, Miss Margaret E., 2 *Rice Hey-road, Egremont*
Oct.	18, 1869	Cook, Henry James, *Byrom-street*
Dec.	10, 1888	Cookson, E. H., 3 *Mersey-street*
Nov.	14, 1892	Coombe, Miss L. M., *Blackburne House*
Oct.	17, 1892	Cooper, Arthur, 2 *Ivy-street*
Oct.	30, 1893	Cotterill, C. C., M.A., *Greenbank School Sefton Park*
Dec.	13, 1875	Cowell, Peter, *Free Library, William Brown-street*
Oct.	30, 1893	Crewe, W. Outram, *Central-chambers, North John-street*
March	19, 1894	Cropper, E. W., *Fearnhead, Chesterfield-road, Great Crosby*
Oct.	6, 1863	Crosfield, William, M.P., *Stanley-street* and *Annesley, Aigburth*

Nov. 3, 1890	Culley, E. H., M.A., School House, *Monmouth*
Feb. 23, 1891	Curwen, Geo., *Anglesea-terrace*, *Waterloo*
Nov. 12, 1883	Daly, Chas., *Grosvenor-buildings*, *Tithebarn-street*
Nov. 12, 1866	Davies, E., F.C.S., F.I.C., The Laboratory, 28 *Chapel-st.*, Ex-President
Dec. 10, 1883	Davey, Wm. J. (Messrs. Elder, Dempster & Co.), 20 *Castle-street* and *Holmleigh*, *Grassendale*
Nov. 28, 1892	Douglas, Robt. R., 150 *Bedford-street South*
Nov. 18, 1889	Duncan, W. A., *Woolton*
Nov. 14, 1887	Eastley, Richard, Superintendent, Meter Department, Liverpool United Gas-Light Co., 156 *Bedford-street*
March 21, 1870	Edwards, Edward E. (Smith, Edwards & Co.), *Adelaide-buildings*, 4 *Chapel-street*
Oct. 15, 1883	Edwards, Frederick Wilkinson, M. S. A., *Amoret House*, *Balliol-road*, *Bootle*, Hon. Treasurer
Oct. 16, 1893	Edwards, Theodore, 26 *George's-road*, *Anfield*
Nov. 16, 1891	Ellis, John W., M.B., F.E.S., 18 *Rodney-street*
April 7, 1862	English, Charles J., 171 *Upper Parliament-street*, Vice-President
Nov. 17, 1890	Farrie, Hugh, 110 *Bedford-street*
Nov. 2, 1891	Fazakerley, John, 40 *Paradise-street*
*Dec. 13, 1852	Ferguson, William, F.L.S., F.G.S., *Kinmundy House*, *near Mintlaw*, *N.B.*
Oct. 5, 1891	Fletcher, J. H., 17 *Tarleton-street*
*Mar. 19, 1885	Foard, James Thomas, 42 *John Dalton-street*, *Manchester*
March 19, 1894	Forbes, Henry O., LL.D., F.Z.S., *Free Public Museum*, *Liverpool*
Oct. 29, 1888	Forster, Walter P., *The Lawn*, *Earlston-road*, *Liscard*

Nov.	12, 1877	Galley, John, *Erstwood, Merrilocks-road, Blundellsands*
Nov.	13, 1882	Gardner, Willoughby, F.R.G.S., 18c *Exchange-buildings*
Nov.	2, 1891	Gibbons, Ramsey, 19 *Ranelagh-street*
Oct.	16, 1893	Given, J. C. M., M.B., *Mossley Hill*
Dec.	12, 1892	Gladstone, R., Junr., B.C.L., M.A., *Vale-road, Woolton*
Oct.	16, 1893	Glasgow, Geo., *Homefield, Breeze-hill, Bootle*
Nov.	14, 1892	Gotch, Francis, M.A., F.R.S., M.R.C.S., 11 *Prince's Park-terrace*
Oct.	29, 1877	Green, Robt. Frederick, 66 *Whitechapel*
Nov.	14, 1892	Green, Wm. McQuie, 3 *Woburn Hill, Stoneycroft*
April	20, 1891	Hale, Miss, Lady Principal, *Edge Hill College*
Nov.	16, 1891	Hampson, R. A., 10 *Sunnyside, Prince's Park*
*Jan.	21, 1856	Hardman, Lawrence, 35 *Rock Park, Rock Ferry*
Dec.	10, 1883	Hargreaves, Jas., F.C.S., F.A.S., *Peel House-Lane, Farnworth-by-Widnes*
Oct.	17, 1892	Harley, Geo., 1 *Water-street*
Oct.	17, 1892	Harrison, Miss, *The Woodlands, Crompton's-lane, Wavertree*
Oct.	17, 1892	Harvey-Gibson, R. J., M.A., F.R.S.E., F.L.S., 43 *Sydenham-avenue*
Dec.	13, 1875	Harpin, E. (Messrs. Bates, Stokes & Co.), 14 *Water-street*
Nov.	30, 1874	Harvey, Henry, M.B., 57 *Wavertree-terrace, Picton-road, Wavertree*
Oct.	17, 1892	Hawkins-Ambler, George A., F.R.C.S.E., M.R.C.S., 162 *Upper Parliament-street*
Oct.	16, 1882	Herdman, W. A., D.Sc., F.R.S., F.L.S., F.R.S.E., Professor of Natural History, University College, 32 *Bentley-road*

March 7, 1880	Hess, Leonard O., 51 *Bedford-street*
Jan. 13, 1879	Higgins, Henry Longuet, 7 *Sandringham-drive, Prince's Park*
March 9, 1868	Holme, James, 10 *Huskisson-street* and 61 *Lord-street*
Oct. 30, 1893	Holt, Alfred, *Crofton, Sudley-road, Aigburth*
Oct. 16, 1893	Holt, Geo., J.P., *Mossley Hill*
*Dec. 14, 1862	Holt, Robert Durning, J.P., 54 *Ullet-road*
Dec. 14, 1891	Hope, Walter Bayard, *Rosthern, Redhill, Surrey*
March 21, 1892	Hughes, Alfred, M.A., *Liverpool Institute*, and 3 *Arundel-avenue*
March 10, 1879	Hughes, John W., *Allerton*
Feb. 20, 1882	Hunter, Hugh, 25A *Duke-street*
Jan. 26, 1863	Johnson, Richard C., F.R.A.S., 46 *Jermyn-street*, VICE-PRESIDENT
Feb. 24, 1868	Jones, Charles W., *Field House, Wavertree*
April 29, 1889	Jones, Morris P., 20 *Abercromby-square*
Oct. 5, 1891	Jones, Hugh R., M.D., B.Sc., 58A *Grove-street*
Oct. 17, 1892	Jones, Wm Wastall, 20 *Water-street*
Dec. 14, 1891	Keyes, Edmund M., B.A., 1 *Harrington-street*
Feb. 8, 1892	Lamb, George, *Heywood Lawn, Great Crosby*
Oct. 31, 1892	Lamb, John, *Heywood Lawn, Great Crosby*
*Dec. 11, 1871	Leigh, Richmond, M.R.C.S., L.S.A., Physician to St. George's Hospital for Diseases of the Skin, 15 *St. James-road*
Nov. 28, 1892	Lister, Jas., *Basil Grange, West Derby*
Jan. 25, 1892	Livingstone, Rev. Canon, M.A., *Aigburth Vicarage*
Nov. 14, 1881	Lloyd, Richard J., M.A., D.Lit., *Lombard-chambers, Bixteth-street*
Dec. 1, 1879	Long, Rev. R. E., B.A., 51 *Hope-street*
Jan. 23, 1882	Marcus, Heinrich, *Trafford-chambers*, 58 *South John-street*
Nov. 17, 1873	Marples, Josiah, *Melvill-chambers, Lord-street*, and *Broomfield, Egremont*

Nov.	14, 1892	Marshall, Anthony R., *Queen Insurance-buildings*
Jan.	26, 1891	Mason, Robert, *Home Lea, Oakfield, Anfield*
Oct.	20, 1879	McArthur, Charles, 165 *Bedford-street*
Oct.	17, 1881	McLintock, R., 8 *Molyneux-avenue, Broad Green*, Honorary Librarian
Oct.	30, 1882	McMaster, John Maxwell (Messrs. J. B. Wilson, Dean & McMaster), 22A *Lord-street*, Honorary Secretary
Oct.	15, 1883	Mead, A. J., B.A., *Earlston-road, Liscard*
Nov.	17, 1873	Mellor, James, Jun., *Weston, Blundellsands*
Dec.	14, 1874	Mellor, John, *Grosvenor House, Crosby-road South, Waterloo*
Nov.	13, 1893	Meyer, Moritz, *Carlton Villa, Lodge-lane*
Oct.	16, 1893	Moore, J. Murray, M.D., F.R.G.S., F. Roy. Col. I., 51 *Canning street*
Nov.	3, 1890	Morrison, Col. G. H., J.P., 10 *Abercromby-square*
Nov.	1, 1880	Morrow, John, *Greenhill-road, Allerton*
March	6, 1882	Morton, George Henry, 14 *Grove-park*
Jan.	8, 1855	Morton, Geo. Highfield, F.G.S., 209 *Edge-lane*
Oct.	29, 1850	Mott, Albert Julius, F.G.S., *Detmore, Chareton Kings, Cheltenham*, Ex-President
Oct.	20, 1890	Mounsey, E., 13 *Falkner-square*
Nov.	2, 1891	Munslow, Thos., 3 *Bryanston-road, Aigburth-road*
*Oct.	21, 1867	Muspratt, E. K., *Seaforth Hall, Seaforth*
Oct.	20, 1856	Nevins, John Birkbeck, M.D.Lond., M.R.C.S., late Lecturer on Materia Medica, Royal Infirmary School of Medicine, 3 *Abercromby-square*, Ex-President
Feb.	6, 1865	Newton, John, M.R.C.S., 44 *Rodney-street*, Vice-President
Feb.	18, 1887	Nicholson, Robert, 11 *Harrington-street*
Jan.	11, 1892	Norris, J.P., 33 *Selborne-street*
Oct.	30, 1893	Nowell, Capt. S., 32 *Upper Parliament-street*

Nov.	2, 1885	Oulton, Wm., *Hillside, Gateacre,* and *Albert-buildings,* 12 *Preeson's Row*
Nov.	2, 1874	Palmer, John Linton, F.S.A., F.R.G.S., Fleet Surgeon, R.N., 24 *Rock Park, Rock Ferry*
Oct.	29, 1888	Paton, J. R., *Apsley-buildings, Old Hall-street*
Nov.	4, 1861	Philip, Thomas D., 49 *South Castle-street,* and *Holly-road, Fairfield*
*Nov.	15, 1886	Poole, Sir Jas., 4 *Abercromby-square*
Oct.	31, 1892	Pooley, Miss, *Fairhome, Liscard*
*Jan.	22, 1866	Raffles, William Winter, 7 *Campden Hill Gardens, London, W.*
Oct.	29, 1888	Raleigh, Miss, 142 *Prince's-road*
April	25, 1892	Ranstead, William, *Inveresk, Withen's-lane, Liscard*
Nov.	12, 1860	Rathbone, Philip H., *Greenbank Cottage, Wavertree*
March	24, 1862	Rathbone, Richard Reynolds, *Glan-y-Menai, by Bangor, Anglesey*
*Nov.	17, 1851	Redish, Joseph Carter, *Lyceum, Bold-street*
Oct.	31, 1881	Rendall, G. H., M.A., Principal of University College, 38 *Bedford-street,* PRESIDENT
Oct.	31, 1881	Rennie, J. W., 70 *Allington-street, S.*
Nov.	29, 1869	Roberts, Isaac, F.G.S., F.R.A.S., D.Sc., *Crowborough, Sussex*
April	18, 1854	Rowe, James, *Leyfield Grange, West Derby*
Jan.	22, 1872	Russell, Sir Edward, *Daily Post* Office, *Victoria-street,* and 6 *Abercromby-square,* EX-PRESIDENT
Feb.	18, 1884	Rutherford, John, LL.B., Lond., 4 *Harrington-street*
Nov.	12, 1883	Rutherford, Wm. Watson (Messrs. Miller, Peel, Hughes & Co.), 8 *Cook-street*
Dec.	12, 1892	Rye, Miss Ellen L., *Bedford College, Bedford-street*
Oct.	30, 1893	Sampson, J., *University College*
Dec.	11, 1893	Savile, Herbert, 20 *Hackins-hey*

Nov.	12, 1888	Scholefield, J. W., J.P., *Pembroke-road, Bootle*
March	19, 1866	Sephton, Rev. John, M.A., 90 *Huskisson-street*
Oct.	15, 1883	Sephton, Mrs., 90 *Huskisson-street*
Jan.	23, 1893	Simpson, J. H., 7 *Adelaide-road, Seaforth*
Oct.	31, 1881	Smith, A. T., Jun., 13 *Bentley-road, Prince's Park*
Dec.	10, 1866	Smith, Elisha, 27 *Alexandra-drive*
April	4, 1870	Smith, James, 37 *North John-street*
Feb.	23, 1863	Smith, J. Simm, 4 *Bramley-hill, Croydon*
April	20, 1874	Snow, Rev. T., M.A., *St. Mary's, Highfield-street*
Jan.	25, 1892	Snow, Wm., B.A., 5 *Dingle-terrace, Dingle-mount*
Nov.	16, 1891	Staunton, M., 3 *Canning-street*
Nov.	18, 1878	Steel, Richard, 18 *Hackins Hey*, Ex-PRESIDENT
Oct.	31, 1892	Steele, Mrs. R. T., 31 *Prince's Avenue*
Nov.	3, 1890	Steeves, George T., *Mount Allars, Bebington*
Feb.	19, 1883	Steeves, Gilbert M., *Mount Allars, Bebington*
April	17, 1886	Tapscott, W. W., 39 *Old Hall-street*, and 41 *Parkfield-road, Aigburth*
*Feb.	19, 1865	Taylor, John Stopford, M.D., Aberd., F.R.G.S., 6 *Grove Park, Liverpool*
Oct.	21, 1878	Thompson, J. W., B.A., Lond. and Victoria, 22 *Lord-street*
April	20, 1891	Tucker, Miss Blanche, *Pupil Teachers' College, Shaw-street*
*Feb.	19, 1844	Turnbull, James Muter, M.D., Edin., M.R.C.P., *The Spa Hotel, Tunbridge Wells*
Jan.	25, 1892	Turton, Wm., 2 *Kimberley-street*
Jan.	25, 1892	Turton, W. G., 2 *Kimberley-street*
Oct.	21, 1861	Unwin, William Andrews, 11 *Old Hall-street*
Nov.	15, 1880	Vicars, John, *Gillbank, Bort, Carnforth*
Feb.	19, 1877	Wallace, John, M.D., *Gambier-terrace*

Jan.	27, 1862	Walmsley, Gilbert G., 50 *Lord-street*
Jan.	9, 1865	Walthew, William, 6 *Brown's-buildings*, and *Vine Cottage, Aughton*
Feb.	20, 1893	Watson, Rev. T., 27 *Great Mersey-street*
April	15, 1889	White, A. G., 71 *Kingsley-road*
Nov.	14, 1870	Wood, John J., 20 *Lord-street*
Nov.	17, 1884	Wortley, Wm., *Walton Grange, Walton*
Nov.	14, 1892	Wright, Rev. E. A., M.A., 44 *Rock Park, Rock Ferry*
Nov.	13, 1876	Yates, Edward Wilson, 37 *Castle-street*

HONORARY MEMBERS.

LIMITED TO FIFTY.

1.—1844 T. B. Hall, *Crane House, Yarmouth.*
2.—1850 The Rev. Canon St. Vincent Beechy, M.A., Rector of *Hilgay, Norfolk.*
3.—1851 The Rev. Canon Robert Bickersteth Mayor, B.D., Rector of *Frating, Essex.*
4.—1861 The Rev. Thomas P. Kirkman, M.A., F.R.S., Rector of *Croft, near Warrington.*
5.—1865 The Right Rev. T. N. Staley, D.D., late Bishop of Honolulu, Vicar of *Croxhall, Staffordshire.*
6.—1865 Sir Edward J. Reed, K.C.B., F.R.S., M.P., *Hextable, Dartford, Kent.*
7.—1865 Cuthbert Collingwood, M.A., M.B., F.L.S., 4 *Grove-terrace, Belvedere-road, Upper Norwood, London, S.E.*
8.—1867 Sir J. W. Dawson, LL.D., F.R.S., etc., Principal and Vice-Chancellor of McGill University, *Montreal.*
9.—1870 Sir John Lubbock, Bart., M.P., F.R.S., etc., *High Elms, Farnborough, Kent.*
10.—1870 Professor Sir Henry E. Roscoe, M.P., F.R.S., etc., Owens College, *Manchester.*
11.—1870 Sir Joseph Dalton Hooker, M.D., F.R.S., etc., *Kew.*
12.—1870 John Gwyn Jeffreys, F.R.S., *Ware Priory, Herts.*
13.—1870 Professor Thomas H. Huxley, LL.D., F.R.S., etc., 4 *Marlborough-place, London, N.W.*
14.—1870 The Rev. Christian D. Ginsburg, LL.D., *Binfield, Bracknell, Berks.*, Ex-President.
15.—1874 Professor Frederick H. Max Müller, LL.D., *Oxford.*

16.—1877 The Earl of Crawford and Balcarres, F.R.S., Foreign Secretary of R.A.S., etc., 9 *Grosvenor square, London.*

17.—1877 Albert C. N. Günther, M.A., M.D., Ph.D., British Museum.

18.—1877 Adolphus Ernst, M.D., Principal of the Department of Science, Philosophy, and Medicine, University of Caracas.

19.—1877 Dr. Leidy, Academy of Science, *Philadelphia.*

20.—1877 Dr. Franz Steindachner, Royal and Imperial Museum, *Vienna.*

21.—1877 The Rev. H. B. Tristram, M.A., LL.D., F.R.S., Canon of Durham, *the College, Durham.*

22.—1881 H. J. Carter, F.R.S., *The Cottage, Budleigh Salterton, Devon.*

23.—1881 The Rev. Thomas Hincks, B.A., F.R.S., *Stokeleigh, Leigh Woods, Clifton, Bristol.*

24.—1881 The Rev. W. H. Dallinger, LL.D., F.R.S., P.R.M.S., *Ingleside, Lee, London, S.E.*

CORRESPONDING MEMBERS.

LIMITED TO THIRTY-FIVE.

1.—1867 J. Yate Johnson, *London*.
2.—1867 R. B. N. Walker, F.R.G.S., F.G.S., *West Africa*.
3.—1868 Rev. J. Holding, M.A., F.R.G.S., *London*.
4.—1868 George Hawkins, *Colombo, Ceylon*.
5.—1868 J. Lewis Ingram, *Bathurst, River Gambier*.
6.—1869 George Mackenzie, *Cebu, Philippine Islands*.
7.—1870 The Venerable Archdeacon Hughes-Games, D.C.L., *Andreas, Isle of Man*.
8.—1874 Samuel Archer, Surgeon-Major, *Singapore*.
9.—1874 Coote M. Chambers, *Burrard's Inlet, British Columbia*
10.—1874 Edwyn C. Reed, *Santiago de Chili*.
11.—1874 Millen Coughtrey, M.D., *Dunedin, Otago, New Zealand*.
12.—1875 Robert Gordon, Government Engineer, *British Burmah*.
13.—1877 Edward Dukinfield Jones, C.E., *Sao Paulo, Brazil*.
14.—1877 Miss Horatio K. F. Gatty, *Altrincham*.
15.—1877 Dr. Allen, *Jamaica*.
16.—1877 Dr. George Bennett, *Sydney*.
17.—1877 Dr. David Walker, *Benicia, U.S.A.*
18.—1883 Wm. Henry Finlay, *Cape Town Observatory*.
19.—1884 Rev. W. G. Lawes, *New Guinea*.
20.—1884 A. W. Crawford, *Oakland, California*.
21.—1884 John Greenwood, Mining Engineer, *Melbourne*.
22.—1884 Robert Abraham English, *Simla*.
23.—1887 Rev. S. Fletcher Williams, *London*.

24.—1889 St. George Littledale.

25.—1889 Mrs. St. George Littledale.

26.—1890 Sir Alfred Maloney, K.C.M.G., *Governor of Lagos.*

27.—1890 Captain John Ferguson, s.s. "Aleppo," 22 *Norma-road, Waterloo.*

28.—1892 J. F. Palmer, L.R.C.P., Lond., M.R.C.S., F.R. Hist. Soc., 8 *Royal-avenue, Chelsea.*

ASSOCIATES.

LIMITED TO TWENTY-FIVE.

1.—Jan. 27, 1862 Captain John H. Mortimer, "America." (Atlantic).
2.—Mar. 24, 1862 Captain P. C. Petrie. (Atlantic).
3.—Feb. 9, 1863 Captain John Carr, ship "Scindia." (Calcutta).
4.—Feb. 9, 1863 Captain Charles E. Price, R.N.R., ship "Cornwallis." (Calcutta and Sydney).
5.—April 20, 1863 Captain Fred. E. Baker, ship "Niphon." (Chinese Seas).
6.—Oct. 31, 1864 Captain Thompson, ship "Admiral Lyons." (Bombay).
7.—April 13, 1865 Captain Alexander Cameron, ship "Staffordshire." (Shanghai).
8.—Dec. 11, 1865 Captain Walker, ship "Trenton."
9.—Mar. 23, 1868 Captain David Scott.
10.—April 7, 1884 Captain G. Griffith Jones, barque "Hermine."
11.—Oct. 7, 1889 Arthur G. Nevins, F.R.A.S., Eastwood-place, Hanley, Staff.

DONATIONS TO THE LIBRARY

RECEIVED DURING THE YEAR.

Agriculture (U. S. Dept. of): Bulletin, No. 4.

Alkali Works Report (Blue Book), 1893.

American Museum of Nat. Hist.: Bulletin, 1893; Report, 1893.

American Philosophical Soc.: Proc., Nos. 142, 143, 144, 1893; Trans. xvii–3, xviii–1.

Anthropological Inst. of Gt. Britain and Ireland: Journ., xxiii–1–2–3–4, xxiv–1; Index to Publications, 1843–1891.

Anthropological Soc. (Washington): Trans., vol. iii.

Antiquaires du Nord (Soc. R. des): Mémoires, 1889–92, *et sup.*

Antiquaries of London (Soc. of): Proc. xiv–4, April–June, 1893. "*The Illustrated Archæologist,*" Sep. 1893.

Architects (R. Inst. Brit.): Journ., ix–19–20–21.

Asiatic Soc. (Bengal): Journ., vol. lxii, part I, No. 3–4; part II, No. 3–4; part III, No. 1–2–3; title, etc.; vol. lxiii, part I, No. 1–2; part II, No. 1; part III, No. 1; Proc., Feb., 1893, to April, 1894; President's Address.

Asiatic Soc. (Royal), Bombay Branch: No. 49–49A, 50.

Astronomical Soc. (Royal): Monthly Notices, liii–9, liv–1 to 7.

Australasian Assoc. for Advancement of Science: Report (4th Meeting, 1892).

"*An Australian Language*" (from N. S. W. Govt.)

Bath Nat. Hist. and Antiquarian Field Club: Proc., viii–1.

Belfast Naturalists' Field Club: Report and Proc., 1893–94.

Belgique (Académie Royale de): Bulletin, 1887–89.

Berwickshire Naturalists' Club: Proc. xiv., 1892.

Birkenhead Lit. and Scient. Soc.: Report, 1893–94; President's Address.

Birmingham Philos. Soc.: Proc., viii–2, 1892–93.

Boston (U. S.) American Acad. of Arts and Sciences: Proc., xx, 1892–93.

Boston (U. S.) Soc. Nat. Hist.: Proc., xxvi; Occas. Papers, 1 to 4; 2 Geological Maps.

Botanical Soc. (Edin.): Trans. and Proc., 1892.

Brit. Assoc. for Advt. of Science: Report, 1893 (Nottingham).

Canadian Institute: Report, 1892–93, 1893–94; Trans., No. 6–7.

Cape of Good Hope, Report of H.M. Astronomer, 1879–89.

Chemical Soc.: Journ., Sep., 1893, to Aug., 1894; List of Officers, &c.; Proc., No. 127 to 141.

Cherbourg Soc. Nationale des Sciences: Mémoires, xxvi, 1889.

Chester Soc. of Nat. Science and Literature: Proc., No. 4, 1894.

Copenhagen Acad. Roy. des Sciences et des Lettres de Danemark: Bulletin, 1893, No. 2–3; 1894, No. 1.

Cornwall Polytechnic Soc. (Royal): Report, 1893.

Davenport (U. S.) Acad. of Science: Proc., v–2.

East India Association, Journal, xxvi–2.

Engineering Society (Liverpool): Trans., xiv–xv.

Engineers' Report (U. S. Army), 1893 (6 vols.).

Engineers (Inst. Civ.): Proc., vols. cxiii–cxvii; Lecture by W. Anderson.

Entomological Society (Lanc. and Ches.): Report, 1893.

Essex Institute: Bulletin, vols. xxiii, xxiv, and xxv–1–2–3; "*Henry Wheatland, M.D.*" (Funeral Sermon).

Finnish Scientific Society: *Acta*, tom. xvi; *Ofversigt*, xxx–xxxi; *Bidrag*, &c, No. 48; Obs. Metéorol., 1881–92 (6 vols.)

Franklin Inst. (Philad.): Journ., Sep., 1893, to Sep., 1894.

Geographia (Soc. de), Lisbon; Boletin, xiii–3–4.

Geographical Soc. (American): Bulletin, xxv–3–4 (i)–4 (ii), xxvi–1–2.

Geographical Soc. (Roy.) of Australasia, Queensland Branch: Proc. and Trans., vol. viii.

Geological Association (Liverpool): Journal, session 92–93.

Geological Society (Roy. Cornwall): Trans., xi–8–9.

Geological Society (Edin.): Trans. vi–6; List of Members, &c.

Geological Society: Qtly. Journ., 196 to 199; List of Members, &c.

Geological Society (Liverpool): Proc., vii–1.

Geological Survey of India: Records, xxvi–3–4, xxvii–1–2; Palaeont. Ind., ser. ix, vol. ii–1; "*Geology of India, Stratigraphical and Structural*" (Oldham).

Geological Survey (U.S.); 11th Ann. Report; Mineral Resources, 1891; Monographs, vols. xvii, xviii, xx, and Atlas; Bulletin, No. 82 to 96.

Glasgow Philosophical Society: Proc., 1892–93.

Glasgow University Calendar, 1894–95.

Göttingen, K. Gesellschaft der Wissenschaften: Schriften, 1893.

Greenwich, Observations, 1891; 5 years' Catalogue of 258 Fundamental Stars, 1890.

Hertfordshire Nat. Hist. Soc. and Field Club; Trans., vii–5 to 9.

Harlem, Société Hollandaise des Sciences: Archives Néerlandaises, xxvii–3–4–5, xxviii–1–2.

Harvard College: Reports of Pres. and Treas., 1892–93.

Harvard Mus. Comp. Zool.: Bulletin, xvi–13–14, xxiv–6–7, xxv–1–2–3–4–5–7; Curator's Report, 1892–93.

Irish Academy (Royal): Proc., ii–4–5, iii–1–2; Trans., xxx–5 to 12; Todd Lecture Series, vol. v.

Japan: Imperial University Calendar, 1892–93.

Kansas Academy of Science: Trans., xiii.

Königsberg Phys.-ökon. Gesellschaft: Schriften, 1893.

Leicester Lit. and Phil. Soc.; Trans., iii–3 to 6.

Lick Observatory Publications (Misc.): vol. ii, 1894.

Linnean Soc.: Journ., Botany, No. 177, 205 to 208; Zoology, No. 155–6–7; Proc., 1890–93; List of Members, &c.

Liverpool Health Report, 1893.

Liverpool Library, Museum, &c.: Report, 1893.

Liverpool Nat. Field Club: Presidential Address (Mr. Morton's).

Manchester Library Report, 1892–93.

Manchester Lit. and Phil. Soc.: Mem. and Proc., vii–2–3, viii–1, 1893–94.

Marseille Faculté des Sciences: Annales, tome i, ii, iii–1 to 4.

Med. and Chirurg. Soc.: Trans., vols. lxxv and lxxvi; Library Catalogue (addit. 1892–93).

Melbourne Exhibition: Official Handbook.

Meteorological Observations (Helsingfors), 1884–86, 1890–91.

Meteorological Reports (Southport), 1892 and 1893.

Meteorological Soc. (Royal): Q. Journ., No. 88 to 91; Cape Heliometer Observations, to 1883.

Microscopical Soc. (Royal): Journ., Aug., Oct., Dec., 1893; Feb., April, June, Aug., 1894.

Microscopical Soc. (Liverpool): Report, 1893.

Müller's (Prof. Max), "Reply" (with Portraits).

"*Nature,*" from Aug. 17th, 1893, to Sep. 13th, 1894.

Naval Observatory (Washington): Report, 1893.

N. York Acad. of Sciences: Annals, vii–6 to 12, viii–1 to 4; Trans., xii.

N. York State Library: Reports.

N. York State Museum.

N. York State Bulletin: Legislation.

N. York State Univ.: Regent's Report.

N. Zealand Inst.: Trans. and Proc., 1892–93.

"*Il Nuovo Risorgimento*": A Review published at Parma and Milan: December, 1893, and Jan. and June, 1894.

Nova Scotian Inst. of Science: Proc. and Trans., i–2.

"*On the Origin of Elementary Substances,*" &c., by Henry Wilde, F.R.S. (from author).

Ordnance Report (U. S. Army), 1892 and 1893.

Paris, École Polytechnique: 63me cahier, 1893.

Philadelphia Acad. of Nat. Science: Proc., Oct.–Dec., 1893, and Jan.–April, 1894.

Photographic Assoc. (Liverpool Amateur): Report, 1893.

Physical Soc. (Royal): Proc., 1892 and 1893.

Physical Soc. (L'pool): 1892 and 1893.

Physique, &c. (Geneva Soc. de): Mémoires, xxxi–2.

Plymouth Institution: Report and Trans., 1892–93.

Polytechnic Soc. (L'pool): Journ, 1892.

Powysland Club; Collections, xxvii–2–3.

Rio de Janeiro Museu Nacional: Archivos, vii.

Rochester (N.Y.) Acad. of Science: Proc., ii–3.

Royal Institution of G. Britain: Proc., 1893.

Royal Soc.: Proc., No. 325 to 335.

Royal Soc. of Canada: Proc., vol. xi, 1893.

Royal Soc. (Edin.): Proc., vol. xix.

Royal Soc. of N. S. Wales: Journ. and Proc., vol. xxvii, 1893; Papers by Prof. Liversidge.

Royal Soc. of Victoria: Proc. (N.S.), iv–2, v, vi.

Saint Petersbourg: Acad. Imp.: Bulletin, N.S., iv.–1–2.

Santiago (Chile) Deutscher W.-schaftlicher Verein: Verhandlungen, ii–5–6.

Scottish Royal Soc. of Arts: Proc., xiii–3.

Smithsonian Institution (Washington): Report, 1891; Contributions to Knowledge, No. 884; Miscel. Collections, vols. xxxiv and xxxvi; Ethnology Report, 1886–87, 1887–88; "Bibliography of Chinookan Language"; "Bibliography of Salishan Language."

Statistical Soc. (Royal): Journ., Sep. and Dec., 1893, and June, 1894.

"*Stars (A New Story of the)*," by A. W. Bickerton (from author).

"Tuft's College Studies," No. 1 and 2.

Vienna K.-Akad. der W.-schaften: Berichte, 1893.

Volta Bureau (Washington): "Histories of American Schools for the Deaf," 3 vols.

Yorkshire Geol. and Polyt. Soc.: Portrait of J. W. Davis, Esq.

Zool. Soc. (Philadelphia): Report, 1893.

TREASURER'S ACCOUNT, 1892-3.

Dr. *The* Literary and Philosophical Society, *in Account with* F. W. Edwards, *Treasurer.* **Cr.**

1892–3.	£	s.	d.	1892–3.				£	s.	d.
To Cash paid Royal Institution, one year's Rent	20	0	0	Balance from 1891–2				7	12	5
„ „ Printing and Binding	79	2	6	By Cash from Subscriptions :—						
„ „ Stationery, &c.	20	8	10	152 Annual Subscriptions, at 21s.	£159	12	0			
„ „ Refreshments, &c.	19	10	0	12 Ladies' Subscriptions, at 10s. 6d.	6	6	0			
„ „ Librarian's Expenses	1	16	0					165	18	0
„ „ Secretary's „	1	4	10							
„ „ Treasurer's „	6	12	6							
„ „ Sundries	1	1	0							
Balance	23	14	9							
	£173	10	5					£173	10	5

Audited and found correct,
(Signed) JAS. BIRCHALL,
RICHD. J. LLOYD.

PROCEEDINGS

OF THE

LIVERPOOL

LITERARY AND PHILOSOPHICAL SOCIETY.

EIGHTY-THIRD SESSION, 1893–94.

ROYAL INSTITUTION, LIVERPOOL.

Annual Meeting, October 2, 1893, Principal Rendall, M.A., in the chair. The following Report was read and passed:

REPORT.

In presenting their Report of the Society's Proceedings during the Eighty-second Session, the Council have pleasure in recording the fact that the meetings have been successful and unusually well attended.

There has again been an increase in the number of new members, 27 ordinary members having been elected during the present, as compared with 23 elected during the previous Session; bringing the total of the Society to 175 ordinary members, 28 honorary members, 28 corresponding members, and 11 associates. There has also been a further increase in the attendance at the meetings, the average having been raised from 70 during the previous Session to 95 during that now concluded.

The Council have to deplore the loss of Mr. T. J. Moore, F.L.S., who joined the Society in 1856, and from that time to a very recent period constantly enhanced the value and interest of the miscellaneous communications, by exhibitions of novelties from the Natural History Department of the Museum. The volumes of the Society's Proceedings for many years contain ample evidence of his industry and usefulness in this direction. While shrinking, even with excess of modesty, from any position of prominence, or from anything that could seem like self-obtrusion, he was thus ever ready to place his stores of knowledge at the service of enquirers. On his retirement from the Curatorship of the Free Public Museum, the Society unanimously elected him an honorary member, a distinction never previously conferred upon any Liverpool resident, which unhappily he has not long survived to enjoy.

The death of the Rev. Henry Hugh Higgins removes from the Society its most venerable figure. He filled the presidential chair from 1859 to 1862, and again in 1889-90; and for upwards of forty-six years was among the most attached of members and frequent of contributors. Irreparable as is the loss to this Society, it is even more so to the city of Liverpool at large, which in his chosen sphere he served with unwearying and affectionate devotion. With entire singleness of aim and rare disinterestedness of life, he placed his great gifts, his industry, himself, at the disposal of the Museum, and sought by the advancement of science to add light, and interest, and sweetness to the lives of his fellow citizens. To all who knew him, the memory of his gentleness, his transparent simplicity, his benign belief in good, his sweet reasonableness of utterance and thought and temper, will remain among their most cherished recollections of Liverpool life.

The Treasurer's Statement of Accounts was read and passed.

The annual election of Office Bearers and Members of Council, and the re-election of the Associates, then took place.

Principal Rendall, the President, then delivered his second Inaugural Address, entitled, "Prometheus, Old and New."

ORDINARY MEETINGS.

I. October 16, 1893. Principal Rendall in the chair. Paper by Professor Oliver J. Lodge, LL.D., D.Sc., F.R.S., on "The Sanity of the average Man."

II. October 30, 1893. Dr. Nevins in the chair. Paper by Sir Edward Russell, "In Memory of Henry Hugh Higgins."

III. November 13, 1893. Mr. John Newton, Vice-President, in the chair. The resignation of the Honorary Secretaryship by Mr. H. Longuet Higgins, under medical advice, was announced, and a vote of thanks to him was passed. Mr. J. Maxwell MacMaster was elected to the office in succession to Mr. Higgins. Paper by Mr. Robert Gladstone, Jun., B.C.L., M.A., on "The Meaning, Scope, and Methods of Anthropology."

IV. November 27, 1893. Principal Rendall in the chair. Paper by Mr. W. Watson Rutherford, on "Pierre Loti, and his place in fiction."

V. December 11, 1893. Mr. R. C. Johnson, Vice-President, in the chair. The chairman alluded to the great loss sustained by the country in the death of Professor Tyndall, who had been an Honorary Member of the Society since 1870. Paper by Mr. R. Frederick Green, on "The place of Realism in Art."

VI. January 8, 1894. Principal Rendall in the chair. The President referred to the death of Sir Samuel Baker, an Honorary Member of the Society. Paper by Mr. John Sampson, on "Gypsies."

VII. January 29, 1894. Principal Rendall in the chair. Paper by Mr. John Newton, M.R.C.S., Vice-President, on "Recent Discoveries as to the Origin and Early History of the Human Race, contrasted with the old ideas."

VIII. February 5, 1894. Principal Rendall in the chair. Paper by Professor R. J. Harvey Gibson, M.A., F.L.S., F.R.S.E., on "The Mushroom Beds of the South American Ants."

IX. February 19, 1894. Principal Rendall in the chair. Paper by J. Birkbeck Nevins, M.D. Lond., on "Cottage Homes at Fazakerley belonging to the West Derby Union."

X. March 5, 1894. Principal Rendall in the chair. Dr. Nevins added to his paper, read at last meeting, a short account of the Cottage Homes at Mettray, Tours. Paper by Mr. R. C. Johnson, F.R.A.S., on "The New Astronomy," an account of Astro-Photography.

XI. March 19, 1894. Principal Rendall in the chair. Paper by Rev. John Sephton, M.A., "A Translation of the Saga of Frithiof the Fearless."

XII. April 2, 1894. Mr. John Newton, Vice-President, in the chair. Paper by Mr. J. Murray Moore, M.D., F.R.G.S., F.R.Col.Ins., on "Recent Socialistic and Labour Legislation in New Zealand."

XIII. April 16, 1894. Principal Rendall in the chair. J. Birkbeck Nevins, M.D. Lond., was elected president for the ensuing two years. The proceedings took the form of a Conversazione, in which Mr. H. O. Forbes, LL.D., F.L.S., Mr. R. C. Johnson, F.R.A.S., Mr. G. H. Morton, F.G.S., Dr. Nevins and Mr. John Newton took part. The retiring President delivered a Valedictory Address.

EXTRAORDINARY MEETINGS.

On the 2nd and 16th April, Extraordinary Meetings were held, at which the laws, as revised by the Council, were unanimously approved and adopted as the Laws of the Society.

Ordinary Members elected during the Session: Mr. J. C. M. Given, M.B., Mr. Thomas Chilton, J.P., Mr. Theodore Edwards, Mr. George Holt, J.P., Professor Edward Jenks, M.A., Mr. George Glasgow, Mr. J. Murray Moore, M.D., F.R.G.S., Mr. W. Outram Crewe, Mr. J. Sampson, Mr. Alfred Holt, Mr. John Bouch, Mr. C. C. Cotterill, M.A., Capt. S. Nowell, Mr. Moritz Meyer, Mr. Herbert Savile, Mr. R. H. Case, Mr. Harold Dingwall Bateson, M.A., Mr. H. O. Forbes, LL.D., F.L.S., and Mr. E. W. Cropper.

Members present at the Annual and the Thirteen Ordinary Meetings: 115, 131, 101, 59, 81, 45, 28, 95, 50, 120, 75, 79, 59, 125.

PROMETHEUS.

By GERALD H. RENDALL,
PRINCIPAL OF UNIVERSITY COLLEGE.

At the opening of our last session I essayed a general theme, attempting to distinguish and describe some of the leading traits of the Greek genius, and to show in what directions it had given example and impetus to Western thought. To-night I have thought it might not be inappropriate to select a particular illustration of the general theme, showing how ancient thought has inspired and verified the new, without obstructing novelty of form or originality of substance. And the primary instance of this rare and truly creative capacity, by virtue of which conscious and direct heredity, far from hampering or dominating, engenders and invigorates poetic individuality, is unquestionably (in the sphere of English literature) to be found in the bond that links the *Prometheus Unbound* of Shelley with the *Prometheus Bound* of Aeschylus.*

'Life,' it has been said, 'copies more from Art than Art from Life.' And of this crowning capacity of Art, upon the side of poetic expression, there is no more signal or fascinating instance than the creation of the 'Prometheus' type, which emerging from the crude fetich notions of early savages gradually ennobled things and forms into ideas and powers, and—in the hands of great masters of song, separated by the gulf of centuries and the lapse of many civilisations—grew at last into a moralised person or type, which for two thousand years has worked and still works upon the consciousness of men, with power to mould imagination, desire and will into action emulous of the impersonated type. Prometheus! what a world of meaning, suggestion, association the name conveys! and how rich in power and inspiration still! He that never was, more truly *is* and acts, than continents of living men. And if for a little we divest him of his garments of song, it is only that we may return to Aeschylus, to Mrs. Browning, and to Shelley, with more apt and sensitive intelligence to catch the poetic harmonies.

---

* In the references—*P.B* signifies the *Prometheus Bound* of Aeschylus, in quoting from which I have used Mrs. Browning's version when suitable: *P.U.* the *Prometheus Unbound* of Shelley.

In literature and in belief the position of Prometheus is unique. To begin with, his mythological descent is more continuous and traceable and sure than is usually the case; we can as it were watch primitive man discovering fire, prizing it, utilising it with mixed wonder and ignorance and satisfaction and misgiving, endowing it with human qualities of skill and cunning contrivance and power, gradually taming and moralising it as his friend and teacher and ally against the harshness of penurious disciplines and the obstruction of indignant unseen powers, and at last erecting it into the figure of Sage and Artist and Prophet and Saviour and Fellow-Sufferer, by whose prescience and patience man overcame destiny, and escaped the pains of ignorance. The process of development, the gradual emergence and definition and clarification of the idea is rich in interest—but appeals mainly to the student of mythology, or folk-lore, or comparative religion. But Prometheus is much more than a mythological survival. It was his fortune to be demigod rather than god; he retained the traces of his genesis from the befriending earthly fire that helped men's daily needs, which they could use and feel their friend, not merely quail before and with blind fears propitiate. About the gods there clung such a heritage of crude, grotesque, and credulous traditions, and usually such an accretion of savage and unmoralised if not ugly or obscene imaginations, that it was impossible to recast the personality, without obscuring characterisation and profaning the authority or actually assailing the existence of the deity so handled. But the heroes and demigods of Polytheism were of more tractable material: they stood closer to the level of humanity; they could be dramatised and moralised effectively, and without prejudice; and the highest fortune in this respect was reserved for Prometheus. The conception of him smote the imagination of the one great dramatist of Greece, who possessed the mythopœic faculty, who could give body and form and human lineament and utterance to the dread Goddesses, the guilt-avenging Furies, and who in Prometheus left for all time his loftiest moral impersonation. In him was set forth an ideal humanity, that embodied the thought of suffering and triumphant martyrdom, by philanthropic and self-chosen pain winning redemption, atonement, salvation, not for a friend only or a people, but for the whole of human kind. And by the firmness of the dramatisation this ideal Prometheus holds the imagination with something of the power of a living and historical exemplar, and becomes in Hellenic guise the *Christus patiens*, the 'Christ reigning from the tree' of ancient thought.

To the Greek ear, the name signified 'Fore-Councillor'—or the 'Forethinker.'

> Methinks the Dæmons gave thee a wrong name,
> *Prometheus*, which means Providence,—because
> Thou dost thyself need providence to see
> Thy roll and ruin from the top of doom. *P.B.*, 85–7.

But this is far from the beginning, or even such nearness to the beginning as we can attain. In Eastern lore *Pra-*

mati 'Forethought' is among the names by which Agni, the god of fire, descended from heaven and in lightning revealed himself to men. And out of the more beneficent aspects of fire, as the thing or rather the live being who cares for men, and provides him with comfort, and all powers of art, and daily needs, there might naturally have emerged the name of worship and the personified idea of Prometheus the forethinker and friend of man, But we may go back probably to a yet more prosaic and concrete commencement, to the 'twirling-stick,' called in the East '*pra-manthas*,' by which, twirled in its socket of wood, fire was artificially, and for long centuries, nay even to this day for purposes of religious ceremonial, produced.

But of Pramati 'God of fire,' still more of Pramanthas the fire-stick, Aeschylus never dreamed. The conception that lay ready for his moulding genius, was, even if derivative from this, purely Greek. It had grown complex, in some respects contradictory, reflecting chequered successions of thought. There was the Prometheus of worship, and likewise the Prometheus of legend. Either Prometheus preserved his lineal connection with fire, but beyond that they had widely parted company. The Prometheus of worship had his holy place without the walls. N.W. from Athens, beyond the Kerameikos or potter's field, lies the Akademeia or grove of Akademos. In this grove, and fitly placed within the precinct of Athene, goddess of home arts, stood an altar on the base of which were sculptured two companion gods. The elder, in the place of honour, wielding the sceptre, was Prometheus; the younger Hephaistos, god of the forge and all fine metal-work. They were the patron gods of the allied handicrafts concerned with fire, the potter's and the smith's. And at the yearly *Prometheia* the god's gift of fire was jubilantly celebrated by the *λαμπαδηφορία* or torchprocession in honour of Prometheus. Of details in the ritual of cult we know nothing; doubtless they would stand in close and interesting connection with the legend.

Beside the cult was the mythology. Legend and belief, as crystallised in myth, are stubbornly and timidly conservative, and lag inveterately behind advancing practice; reformed conduct is slow to find new and adequate mythologic expression. If painting and sculpture are conservative of traditional types, legend is more so still. For this reason mythology remains more childish, more irrational, and as a rule more immoral and repulsive, than the standards of contemporary life and conduct. Gradually sinking from belief into tradition, and thence into legend or nursery tale, it is doomed for the most part to expire in laughter or oblivion. But there are times when prophet or poet or allegorist gives fresh spiritual interpretation and content to the outworn creations of the past, and as a re-maker of mythology takes rank among the teachers and reformers of mankind. Homer and Hesiod, we read, *made*, that is re-made, *the gods of Greece*, and established their generations. For Prometheus, Hesiod is the fullest of the old authorities. To Hesiod he was one among the Titans, brother to Atlas and Menoitios, and son of the elder Titan Iapetos. The Titans are themselves the rude and monstrous rebels of superhuman force and savagery, who for ten years waged even war with heaven, with earthquake and fire and eruption of mountains, till Zeus gained the victory and chained them fast below the abyss of Tartarus. Prometheus recalls the combat and the dooms—Atlas, at the world's verge shouldering the solid weight of heaven; and Typhon, the hundred-handed, crushed beneath Aetna, whose throes and rumbles are spasms of the tortured Giant, and his flames the heat of his breath.

For still my brother's doom doth vex my soul,—
My brother Atlas, standing in the west,
Shouldering the column of the heaven and earth,
A difficult burden! I have also seen,
And pitied as I saw, the earth-born one,
The inhabitant of old Cilician caves,
The great war-monster of the hundred heads,
(All taken and bowed beneath the violent Hand),
Typhon the fierce, who did resist the gods,
And, hissing slaughter from his dreadful jaws,
Flash out ferocious glory from his eyes,
As if to storm the throne of Zeus. Whereat,
The sleepless arrow of Zeus flew straight at him,
The headlong bolt of thunder breathing flame,
And struck him downward from his eminence
Of exultation; through the very soul
It struck him, and his strength was withered up
To ashes, thunder-blasted. Now he lies
A helpless trunk supinely, at full length
Beside the strait of ocean, spurred into
By roots of Ætna: high upon whose tops
Hephæstus sits and strikes the flashing ore.
From thence the rivers of fire shall burst away
Hereafter, and devour with savage jaws
The equal plains of fruitful Sicily,
Such passion he shall boil back in hot darts
Of an insatiate fury and sough of flame,
Fallen Typhon,—howsoever struck and charred
By Zeus's bolted thunder.

Prometheus was more sagacious than the rest. After the manner of old myths, with their grotesque explanations of heathen ritual, and their predilection for low forms of savage cunning, Prometheus outwitted the god of heaven thus. He cut up a bull for sacrifice; of flesh and skin and choicer parts he made one parcel, and on the top of it placed the stomach, as the least attractive part: of the remainder, bones and fat, he made as large and attractive a pile as he could devise, and thus entrapped the god Zeus into choosing for his share the less favoured parts—a tale obviously constructed from the facts of sacrificial usage. As sequel to the fraud, Zeus withholds fire from hapless mortals, but the cunning of Prometheus once more avails, and secreting the celestial element in the hollow of a ferule stalk he conveys the precious gift to men.* There follows the age-long torment of Prometheus, the exposure upon Caucasus, the daily gnawing and the nightly renewal of the victim's liver by the ravenous vulture of Zeus. And to this is appended the Pandora myth, to which Aeschylus makes only passing reference.†. For revenge on man, Hephaistos, by order of Zeus, moulds the maiden Pandora, the Eve of Greek mythology. Deaf to the warning of Prometheus, his brother Epimetheus 'afterthought' receives from Zeus the treacherous gift, and through her are set loose upon the world all pains and plagues and delusions and false desires and hopes that from that day forth have marred and frustrated the progress and happiness of man.

Such are the materials in the tragedian's hand—local Athenian cults, deposits of ancestral legend, and some more varied strands supplied by Greek imagination. It needed genius to transmute them into a parable of larger meaning. To gain his end Aeschylus must (1) ennoble the myth; (2) dramatise; (3) interpret.

1. The ennoblement of the myth. With the fine self-restraint that was instinctive in the genius of Greek tragedy, Aeschylus tacitly ignores, or else allusively refines, all the grotesque and vulgar ingredients of the myth. The uncouth and Titan attributes of Prometheus

---

* The use of the dry pith of the ferule as natural tinder is primitive and widespread.

† There is unmistakable allusion to this sequel in the line, "Blind hopes I set to inhabit in their house." *P. B.*, 250.

are dropped; they are recalled only in notes of Promethean sympathy for his fallen brethren, laid low in Tartarus. Of the fraudulent dissection of the victim there is not a word. It is resolved into wise mastery of all lore of sacrifice and augury and divination.

I fixed the various rules of mantic art,
Discerned the vision from the common dream,
Instructed them in vocal auguries
Hard to interpret, and defined as plain
The wayside omens,—flights of crook-clawed birds,—
Showed which are, by their nature, fortunate,
And which not so, and what the food of each,
And what the hates, affections, social needs,
Of all to one another,—taught what sign
Of visceral lightness, coloured to a shade,
May charm the genial gods, and what fair spots
Commend the lung and liver. Burning so
The limbs encased in fat, and the long chine,
I led my mortals on to an art abstruse,
And cleared their eyes to the image in the fire,
Erst filmed in dark.

All details of the theft of fire are left inexplicit—touched off in a stately hexasyllable.* The gnawing vulture is rendered only in terms of menace and apprehension—not of presentation. Above all, the central figure is magnified and moralised. The Titanic lineage is modified; his mother becomes Themis, one name for Earth, the many-named, with whom are the secrets of prophecy.

My mother, then,
Who is called not only Themis but Earth too,
(Her single beauty joys in many names)
Did teach me with reiterant prophecy
What future should be, and how conquering gods
Should not prevail by strength and violence.

---

* *ναρθηκοπλήρωτον δὲ θηρῶμαι πυρὸς*
πήγην κλοπαίαν, ἣ διδάσκαλος τέχνης.

Throughout a superhuman environment is provided—alike in the locale, on the far Scythian strand of fabled Ocean, and in the *dramatis personae*. No personage of lower than dæmonic rank appears upon the stage. The actors are: *Gods*—Hermes and Hephaistos; *Ministers of God*—Strength and Force; the weird and suffering figure of legendary *Io*, a strange Aegypto-Hellenic personality, that caught the fondness of Aeschylus for the fantastic and marvellous; the *Ocean-Nymphs*, a chorus as it were of angels or of sprites. I do not know that any other poet has adventured a drama for *visible presentation* in which all the actors are thus superhuman. It is a *tour de force* that few could have attempted and not failed. It is, as it were, to stage *Paradise Lost*, which even as a literary feat is of immense daring. In this way Prometheus holds converse only with his peers, and in his inflexible defiances is set upon a pinnacle that exalts him above celestial powers. *Strength* and *Force* he treats with a disdainful silence, as befits the brutal myrmidons of tyranny in execution of the tyrant's orders. Hephaistos does the behest of Zeus with protest and pity and avowed reluctance, and consents to it only because his will is of more craven and pliant temper than that of Prometheus. In doing it he owns the superior greatness of his brother god.

Ho, thou!
High-thoughted son of Themis who is sage!
Thee loth I loth must rivet fast in chains
Against this rocky height unclomb by man,
Where never human voice nor face shall find
Out thee who lov'st them; . . . .
. . . . . in that thou, a god,
Didst brave the wrath of gods and give away
Undue respect to mortals, for that crime
Thou art adjudged to guard this joyless rock,
Erect, unslumbering, bending not the knee,

And many a cry and unavailing moan
To utter on the air. For Zeus is stern
And new-made kings are cruel.

He patronises and applauds the elderly weakness of Oceanus; consoles afflicted Io with godlike sympathy and sustaining revelations; and in the closing scene showers contumelious taunts on Hermes, the docile footman and varlet of the Almighty. Above all, the hero is himself endowed with superhuman quality and attribute. Prometheus is no longer the sly and surreptitious trickster of old myths; he confronts the father of gods with equality of will, if not of strength; foreseeing the long centuries of pain, he does not quail nor yield, but to the last defies omnipotence to shake his fortitude or abate his resolution.

Prom. Vainly dost thou chafe
My soul with exhortation, as yonder sea
Goes beating on the rock. Oh, think no more
That I, fear-struck by Zeus to a woman's mind,
Will supplicate him, loathèd as he is,
With feminine upliftings of my hands,
To break these chains. Far from me be the thought.

More than this, by a new *motive,* inserted, so far as we know, by Aeschylus himself, Prometheus knows the secret, confided to his mother Themis, which contains the eventual overthrow of Zeus, and makes open boast of it. He threatens the godhead upon equal terms. He will not bargain for forgiveness. To reveal the secret would secure remission of all pains, but his unconquerable will elects to husband it for retribution.

Prom. Yet Zeus, albeit most absolute of will,
Shall turn to meekness,—such a marriage rite
He holds in preparation, which anon
Shall thrust him headlong from his gerent seat
Adown the abysmal void. . . .

. . . . . . No escape
From all that ruin shall the filial Zeus
Find granted to him from any of his gods,
Unless I teach him. I the refuge know,
And I, the means. Now, therefore, let him sit
And brave the imminent doom, and fix his faith
On his supernal noises, hurtling on
With restless hand the bolt that breathes out fire;
For these things shall not help him, none of them,
Nor hinder his perdition when he falls.
. . . . Ay, and Zeus,
Precipitated thus, shall learn at length
The difference betwixt rule and servitude.

. . . .

Chorus. How art thou not afraid to utter such words?
Prom. What should *I* fear, who cannot die?
Chorus. But *he*
Can visit thee with dreader woe than death's.
Prom. Why, let him do it! I am here prepared
For all things and their pangs.

. . . .

Let him now hurl his blanching lightnings down,
And with his white-winged snows and mutterings deep
Of subterranean thunders mix all things,
Confound them in disorder. None of this
Shall bend my sturdy will and make me speak
The name of his dethroner who shall come.

Throughout too the hero's motive is ennobled. It was not cunning, or ambition, or self-seeking, that prompted the commission of the crime—but disinterested love of man. 'Philanthropy,' the love of man, in intention if not in act beneficent, was his pure and guiding aim.

Such fruit is plucked from love of man.
Because I gave
Honour to mortals, I have yoked my soul
To this compelling fate. Because I stole

The secret fount of fire, whose bubbles went
Over the ferule's brim, and manward sent
Art's mighty means and perfect rudiment,
That sin I expiate in this agony,
Hung here in fetters, 'neath the blanching sky.

This, coupled with Greek hatred of the tyrant, is throughout the dominant and single motive. Such motive amply redeems the questionable fault of disobedience, and Prometheus attains his permanent significance in the world's thought, as friend and champion, and therefore too — a loftier thought, established by Aeschylus—as self-determined martyr of mankind. He is not alone the founder of material civilisation, of builded houses, and horsed chariots, and sea-traversing ships, but likewise of all wise arts and learning, of number and letters and medicine, and the rising and the setting of the stars, and of the deeper lore of omen augury and sacrifice.

In one word learn the whole,
That all arts came to mortals from Prometheus.

But it is time to pass on to the *Dramatisation of the Myth*. This is determined by the conditions of Greek Drama. It was enacted in the open air, before a vast assembly; the actor wore the high *cothurnus*, the barred and sweeping train, the tragic mask; he declaimed his recitative with measured deliberation audible to a concourse numbering twenty or thirty thousand. It was necessary that all should be large and measured in its presentation. For shifting scenes, for rapid entrances and exits, for excited action, for delicate play of feature or of gesture, there was no place. The *Prometheus* is the climax of this statuesque presentment of drama. The entire action centres on the single figure of the Protagonist; others appear and pass, but the Protagonist is at the outset nailed and pinioned to the rock, and there hangs motionless and manacled 'bending not the knee,' until the final and tremendous crash, when amid earthquake and whirlwind and lightning the solid earth splits and gapes to swallow him. It is as it were a Drama of the Crucifixion. The scenic setting is extraordinarily bold. Aeschylus was in this department a fearless innovator, or rather *inventor*. Stage, scenery, costume, music and choric movements, throughout the great days of drama bore the impress of his genius. Our play is full of bold experiment. The background is a 'beetling precipice,' channelled and scarred by torrents and 'a storm-rent ravine.' This is itself a bold variant from the customary background of architectural façade, and has few parallels. Prometheus is visibly hooped and manacled in the adamantine fetters. The maiden chorus are mechanically wafted or swung in upon their winged car. Ocean appears upon his winged hippogriff. So 'the horned maiden' seems to have worn the cow-emblems, that denote her transformation and identity. The gadfly's sting maddens her into beast caperings. It is not improbable that the wraith of the spectral herdsman Argus appeared visibly upon the stage, as does the spirit of Darius, and the ghost of Klutaimnestra 'ranging for revenge,' in other plays. The *denouement* is amid the crash of elements, thunder and lightning, and rending of the solid earth.

Prom. Ay! in act now, in word now no more,
  Earth is rocking in space,
And the thunders crash up with a roar upon roar,
  And the eddying lightnings flash fire in my face,
And the whirlwinds are whirling the dust round and round,
  And the blasts of the winds universal leap free
And blow each upon each with a passion of sound,
  And æther goes mingling in storm with the sea.

We have outgrown in part these crude expedients and appeals. But they attest the daring genius of the great workman in the supernatural. And respecting such stage appeals to the imagination, be it remembered that while Art is young, imagination is generous, and that, given the stage of development attained, such expedients probably assisted the imagination at least as efficaciously, and disturbed æsthetic concentration less than the elaborate historic reproductions of scenes and stage furniture which modern taste applauds.

Dramatic unity is rigidly maintained—though the observance comes of free poetic intuition, not of established canons—and fully satisfies Aristotle's summarised definition of tragedy as the 'representation of an action that is serious, complete, and of a certain magnitude.' The piece is an organic whole, exhibiting the tragic conflict of interest and motive, in the collision of two equal and indomitable wills; to the development of this opposition, which can scarcely be called 'a plot,' and which might indeed be handled as a series of lyrical monologues, the lesser interlocutors one by one contribute; they serve, each after their kind, first Strength and Force representing brute powers of nature, then Ocean personating aged wisdom and compromise of the Polonius type, then the Ocean nymphs with gentle, timorous persuasions of affection, then Io the victim of suffering entailed by disregard of powers that be, to test and dramatise the opposing will, and interpret its workings. Recognition of this will disarm one criticism. The *Prometheus Bound* has been criticised as devoid of *movement* in the plot. Physically this is true. The hero is from first to last immovable; so likewise is his will. But what the plot developes is precisely this, the unalterable fixity of will, and therein the approaching doom. 'Each speech of Prometheus is a step in the action, each word equivalent to a deed, the authentic voice of will repudiating physical bondage, and declining each solicitation to surrender.' The same reproach, and with precisely equal justice or injustice, has been brought against the *Samson Agonistes*, which alike in name and intention has drawn largely from the *Prometheus*.* To it Dr. Johnson objected that 'the intermediate parts have neither cause nor consequence, neither hasten nor retard the catastrophe.' The criticism was shallow, where assuredly each episode—Manoa, Delila, Harapha—serves to heighten and intensify the image and the character of the protagonist—to lead inevitably on through culminating pity and terror to the catastrophe. And so here the hard obedient truculence of Strength and Force, and the ineffective sympathies of nature in her more sympathetic aspects, whether pliable as in old Ocean, or pitiful and tender as in the Ocean-Nymphs, who of old had beaten their breasts and joined the lament of sorrowing Thetis, serve to isolate and magnify the protagonist, and move in his behalf the 'pity and terror,' which prepare the way for Hermes and the bolts of doom.

What is the intention and *interpretation* of the whole? For to the Greek view, at least of the fifth century B.C., the office of the poet is to instruct. Poetry took rank with prophecy, as a form of divine madness, of inspiration. The legendary story is the text, the completed drama is the comment or sermon. Hardly before Aristotle is Poetry regarded in itself as a form of Art, justified for its own sake, and having pleasure for its end: and in no Greek poetry is the moral office of the poet more confessed and conspicuous than in Aeschylus. 'He is the prophet of Greek tragedy, as Sophocles is the artist, and

---

* Milton contemplated as companion dramas a *Samson Pursophorus*, and a *Samson Hubristes*.

Euripides the realist.' He has a message for his age, and delivers it clearly and unmistakeably. Each play is charged with personal and ethical intention. It was his endeavour, at a chosen epoch of world history, to reinterpret the past, and to deduce from it new thoughts of God, and new hopes for man. He seeks to harmonise, in a nobler synthesis than faith and reason had yet adjusted, 'the claims of fate and will, of law and life, of God and man, in this present world; to connect suffering with sin,' and discipline with moral progress; to 'unveil the majesty of Providence and indicate Divine wisdom and direction in the march of secular events.'

In interpreting our present tragedy, there is an element of speculation; for the *Prometheus Bound* is not in itself a complete whole. It is one member of a trilogy, or set of three plays, performed successively and constituting a coherent whole. Their names were the *Prometheus Bound,* the *Prometheus Loosed,* and *Prometheus the Fire-bearer.* Such is the order tradition records. Of the general gist of the *Prometheus Loosed* there is no doubt. Surviving fragments show that it resolves the knot of conflict between the pitted gods. The rock to which Prometheus is made fast reappears in the upper world, on the height of Caucasus. The Titan is still defiant, irreconcilable; the eagle, 'the winged hound of Zeus,' each third day gnawing at the inexhaustible liver. His spirit is so far broken, that whereas before he vaunted immortality in the face of Zeus, he now pines for release by death. Meanwhile Zeus has inaugurated a covenant of peace; he has liberated from Tartarus the penitent Titans, who themselves appear to their brother Prometheus, attesting reconciliation and peace. Zeus holds out the hand of fellowship, and Prometheus disclosing to Zeus the fateful secret, thereafter secures deliverance from his chains.

Zeus commissions his own son Herakles, thirteenth in descent from Io, to kill the torturing eagle and set free the sufferer. Herein even the love of Zeus for the hapless Io finds eventual justification. Its conception was in pain and inflicted misery, but its issue was the redemption of mankind by Herakles the ideal hero and benefactor of the race. Io suffered much, but reward was entailed in the suffering—she was made mother of him than whom none was greater among men, who himself through toil and conflict attained a crown of bliss. On the place of *Prometheus the Fire-Bearer* in the trilogy, there is room for doubt. In default of evidence, it was supposed to set forth the first theft of fire, and on this assumption a modern poet has constructed his poem *Prometheus the Fire-Giver*. But this, with its accompaniments of trickery and fraud, an over-reaching Prometheus and a baffled Zeus, is just that part of an outworn theology which Aeschylus repudiates. The true interpretation regards the lost play as a drama of homage to Prometheus the Fire-bearing Titan, worshipped with torches, reverenced by artists in clay and workers in metal, and installed with divine honours in his holy precinct in the Grove of Akademos—a play parallel in scope to the poet's own *Eumenides*.

Thus the old order interprets the threefold drama thus:—

Prometheus the Fire-lifter—the Sin.
Prometheus Bound—the Punishment.
Prometheus Unbound—the Redemption.

The new, accordant with tradition, and with more of insight and nobility, gives:—

Prometheus Bound—the Strife.
Prometheus Loosed—the Reconciliation.
Prometheus the Fire-lifter—the Fruition of companion godhead.

And this order we shall presuppose, in attempting to give didactic form and interpretation to the poetic implications of the play.

From the guesses of the old mythology Aeschylus seeks to elicit a right thought of God. He associates it firstly with the thought of Order, of that reign of law, which in human society was the political discovery of Greece. Mythology attests the passing of God from Chaos to Kosmos, from anarchy to law. In the far distance of thought lay primeval Chaos, and the superincumbent unpersonified Ouranos. Next came the reign of Kronos, infringed by insurgent forces of anarchy and lawlessness, incarnate in the Titans. To the days of Kronos succeeded the dispensation of Zeus, and high-handed subjugation of the unruly Titan powers. Prometheus, the one wise order-loving Titan, and therefore the mightiest of Titans, sided with Zeus, and aided him to that eventful victory. So Order, as personified in Zeus, becomes supreme.

> What thing his nod hath ratified stands fast
> 'Tis he whose breath prospers each design.

And the Order is a *moral* Order, subject to the law of righteousness; Zeus himself, much more then Prometheus and all lesser gods, and most of all mankind, must yield obedience to the order, or must receive the chastisement and penalty of disobedience. It was an old saying ἀνάγκῃ οὐδὲ θεοὶ μάχονται—'With Necessity not even gods may cope.' The meaning of this necessity, from which not Zeus himself is exempt, revealed itself to Aeschylus as 'Righteousness'—which even to the divine counsels is the one guarantee of power and consummation. In the union of power and wisdom, energy and beneficence, consists the impersonation of righteousness, which is God. This is the parable of Prometheus and Zeus, alike in their first covenant and in their subsequent antagonism—that Power rejecting Wisdom (even the invincible Titans themselves) must come to nought, that Power allied with Wisdom (Prometheus hand in hand with Zeus) is invincible—that Wisdom rebelling against Power is fettered and manacled till the way of reconciliation is found. A pregnant passage in the *Prometheus* sets forth as boldly perhaps as public piety allowed, the subjection, or rather the conformity of Zeus to Fate, and the law of Holiness.

Prom. Necessity is stronger than mine art.
Chorus. Who holds the helm of that necessity?
Prom. The threefold Fates and the unforgetting Furies.
Chorus. Is Zeus less absolute than these are?
Prom. Yea,
And therefore cannot fly what is ordained.
Chorus. What is ordained for Zeus, except to be a king for ever?—*P. B*, 515–20.

The seeming contradiction is resolved into a higher harmony—Destiny is the supremacy of righteousness—and the end of Zeus is not subjection, but perfected conformity of will to the law of righteousness. The two made one, antagonism ceases, and destiny identifies itself with the will of Zeus. The word proves true

None save Zeus alone is free.—*P. B.*, 50.

This Moral Order is evolved *progressively*. The recognition of the law, still more the acceptance of it, is gradual. In face of Polytheism, slowly purging itself to more spiritual monotheism, the Greek admits a thought unfamiliar to our own theology, that God himself learned wisdom step by step, through gradual disciplines. The progress from Chaos into Kosmos is an eternal process, shaping gods as well as men, and imaged in the eventual reconciliation of Zeus and Prometheus.

From the standpoint of reasoning Pagan belief, not basing itself upon any direct communicated revelation, but on the intuitions and inferences of the moral reason, this attitude becomes, under given conditions, inevitable. Greek religion—in accordance with the general character of European thought, whether in primitive theologies or modern science—was founded upon apprehensions of God, and recognitions of Divine action in the objective world. At the earliest stage at which thought separates itself from perception, and begins to demand a cause for each effect, each object that exhibits motion or change or any inward operation is credited with life, or else (usually at a later stage) regarded as the organ of a sentient life or will. The world of things is peopled with gods, as manifold as the objects or the forces that solicit interest and explanation. Man moves among a world of fetiches, which are either gods or the organs of gods. With the growth of observation and reason and generalising power, the number of gods diminishes, while the scope and functions of each individual god are correspondingly enlarged. Polytheism, guided by reason, enters upon its progress towards its inevitable goal, monotheism. In assisting this evolution the relations of the religious sense to traditional beliefs are peculiar—for the most devout and reverential minds experience the strongest bias towards the elevation of the Supreme Deity; and the subordination or even supersession of a lower god is not a motion of atheism, but another round surmounted towards the attainment of a higher theism. The subtraction of prerogative from the lower is an augmentation of prerogative in the higher, and in the work of thus abridging and extending powers, it must be more or less consciously admitted that the gods upon whom faith rests and whose existence is not called in question, are yet somehow correlated to man's apprehension of their being, and derive function and efficacy, if not existence, from his recognition of their divinity. It is hard indeed to reproduce a bygone state of thought—to say for instance with any confidence how far Aeschylus believed in the existence of a Prometheus past or present, how far in subordination of his attributes he was paving the way for their suppression or concerned solely for the exaltation and supremacy of Zeus, or how far again he consciously held that Prometheus was the creation of a bygone stage of faith, obsolete yet claiming reverence still, just as some august and holy image, wrought by the hand of worshippers of old, might find a memorial niche in the sanctuary of an all-ruling sovereign successor.

Belief can effect its passage from the Many to the One in more ways than one. Running the way of Eastern monotheism, it can regard the popular and exoteric gods as names or phases that represent the diverse energies and attributes of the one supreme—accounting earth 'one form of many names,' and so gradually absorbing and including all particulars in a comprehensive unity of thought. Or secondly, taking its stand upon inner facts of consciousness, and declaring matter and all its attributes to be an outcome and function of mind, and not mind a result and accident of matter, it can find unity in a pantheistic interpretation of the universe: but for this conception Greek thought in the time of Aeschylus was quite unprepared. Or once again it can attain monotheism by exalting a single god to power and rank above all other gods, who may continue for a time to hold their place as subordinate ministers and agents of the Almighty. And this was the direction in which, in perfect consonance with the trend of Greek theology from Homer downwards, the genius of Aeschylus was at work. He went further in the direction of personal monotheism than any great Greek teacher. For the time being the Greek found full satisfaction for his subjective consciousness in investing his gods or god with perfected humanity of ethos, mind, and will. The sophistic movement, destined to culminate in the transcendental dualism of Plato and of Aristotle, and in the monistic Pantheism of the Stoics, had not as yet begun. Aeschylus rests in assurance of a cosmic harmony, explicable as the manifestation of the will of one Zeus, supreme and perfected in righteousness. Not Prometheus only, but Hephaistos, Hermes, Oceanus, become obedient subjects and ministers of Zeus, and the single way of power or happiness or holiness lies in conformity to the will of the most High. For Prometheus, for mankind, for Athens, this is the way of salvation; so that instinctively, rather than of purposed allegory, Prometheus may be said to represent the course of history, or, if we so phrase it, the genius of humanity. He too was disciplined by hard degrees from ignorance to wisdom, from disaffection to acceptance. The struggle is a martyrdom, like the long agony through which man's lot has been to contend with inexorable powers, that torment and all but suppress, yet cannot wholly break or annihilate him.

To Prometheus, as ever again to mankind, the purposes and methods of God, the harsh disciplines of suffering and law, seem a pitiless, self-centred tyranny that mocks his prayer and baulks his efforts, and derides his pains. God is 'the Tyrant of the world, strange, savage, ghastly, dark and execrable,' the arch-fiend that Shelley delineates; not moral, but working only, in reality as well as in appearance, by his ministers, Strength and Force. But the view of Prometheus was faulty and shortsighted. Scrutinised closely, the play itself vindicates the wisdom and righteousness of Zeus. The essential sin of Prometheus lay in *αὐθαδία*, *i.e.*, self-willed rebellious stubbornness, imputed to him in the opening lines:

> It doth behove he expiate his sin,
> Learning obedience to the empery of Zeus.—*P.B.*, 9–10

and reiterated through the play by every personage who comes upon the scene; by Ocean and the Ocean-Nymphs hardly less solemnly than by Hermes himself:

> Self-will
> Disjoined from wisdom is but impotence.—*P. B.*, 1012.
> Therefore take heed and look—count not self-will
> A better gift than wisdom.—*P. B.*, 1037–8.

It had been the purpose of the new ruler, whose divine task it was to introduce order in place of chaos and self-will, to extirpate the human race and replace it by a better recreated substitute. This purpose Prometheus, in generous shortsighted devotion, enlisted on behalf of what was immediate poor and transitory, defeated; saving indeed mankind, but thereby perpetuating, while bettering, imperfections. He, not Zeus, is the true author of men's pains, which he planned to alleviate. He suffers rightly the chastisement of rebellion. But the divine counsel, in seeming defeat, yet triumphs and is justified. Men are not the sport and play of spiteful gods. Suffering is entailed on man, his hated portion but his allotted privilege, for by it progress and redemption are attained. *Παθήματα μαθήματα.*

> Men must learn
> Self-conquest in the school of suffering.
>
> 'Tis Zeus alone who shows the perfect way
> Of knowledge; he hath ruled,
> Men shall learn wisdom, by affliction schooled.[*]

The Almighty Power, far-seeing, with no variableness of shadow or turning, with its regard fixed on the eternal not the temporary, on the universal not the particular, correcting sin by suffering, and thus in man's despite and scorn perfecting humanity, is set over against the rash Titanic self-assertive disobedience, which, blindly combating the highest good, enlists our sympathy, but cannot justify itself to the highest reason.

---

[*] Aeschylus, *Agamemnon*, l, 176–7.

This is the phase—Prometheus the prototype of human advance in all things high – on which Shelley, though in a very different spirit to Aeschylus, bases his splendid sequel. He found in Prometheus, as an allegory of the human mind, a figure adapted to set forth those 'beautiful idealisms of moral excellence,' with which through 'a thousand unapprehended combinations of thought' poetry is commissioned to illumine and captivate 'the great instrument of moral good—the imagination.' 'Impersonations clothed in its Elysian light stand thenceforward in the minds of those who have once contemplated them, as memorials of that gentle and exalted content which extends itself over all thoughts and actions with which it coexists.'* Shelley is not completing Aeschylus; he refrains from any such perilous competition, and expressly disavows any design of reconstructing the lost play. Nay, he consciously changes the main motive, 'averse from a catastrophe so feeble as that of reconciling the Champion with the Oppressor of mankind;' and the resemblance, which at first sight suggests dependent reproduction, resolves itself upon examination into what is either verbal and external, or else an analogy of contrast. The *Prometheus Bound* imposed on Shelley the dramatic form; but in 'a drama with characters and mechanism of a kind yet unattempted,' a drama for the solitude of the study, not the frequency of the stage. Aeschylus wrote for an audience of 20,000 citizens; the *Prometheus Unbound* was by its author's own declaration 'never intended for more than five or six persons.' Saturated as Shelley at this period was with the Greek Tragedians, and more particularly Aeschylus, the pocket companion of his days of desultory wandering, the poem is an extraordinary testimony to the stuff and independence, not to the docility, of the poet's genius. Owning that he had 'in a sense no dramatic talent,' Shelley had earlier 'taken the resolution to see what kind of a Tragedy a person without dramatic talent could write.' He fitly calls his poem a 'Lyrical Drama,' and in the final act it loses itself in untrammeled lyrical effusion. Asia, Panthea and Ione are patterned on the Ocean Nymphs of Aeschylus; the general scheme of a drama of divine personalities—Hercules, Ocean, Mercury—is drawn direct from the Greek, and helps to complicate interpretation. Echoes of phrase—the 'unseasonable seasons,' 'To thee unwilling most unwillingly,'—and snatches of direct translation abound; but directly we pass from form to philosophic or poetic content, divergence is complete. The central figure, Prometheus, is the same or parallel in general intention, but his relation to God, to history, to nature, and to man, is vitally opposed to the teaching of Aeschylus. Shelley's whole genius was indeed — in contrast with that of Aeschylus — subjective, personal and lyrical, not objective, concrete, or dramatic. And this is not merely a mode of outward expression, but an essential quality of thought, that went far to determine his philosophy and creed. His creed is a poetic pantheism, intuitive rather than systematic. Aeschylus approached religion from the objective side, and while shaking off the limitations of localised and circumscribed Polytheism, in his approaches towards Monotheism conceives God as director and upholder of an objective order, which as the expression of his will curbs the eruptions of Nature, visits with retribution all individual license, and alone gives stability to states or empires. But to Shelley the whole objective order is at best a hint and metaphor, suggesting possibilities as yet unrealised. In his eyes the Christian scheme of theology had failed far more irreparably than Athenian polytheism in the eyes of Aeschylus; and hope—rather than faith—fell back upon a vague and sentimental Pantheism, which clung to incidental exhibitions of love in life or consciousness, as the key to the insoluble riddle with which experience and phenomena tantalise our moral intuitions. 'The divine is driven beyond any objective form, to some vague indefinable beyond. Religion becomes a kind of divine discontent with all attainable, an unsated aspiration, an effort towards "a margin" that "fades for ever and for ever as we move."'* It is this which lifts the poetry of Shelley to incomparable excellence in the expression of *ideal* desires and *ideal* regrets—

---

* *Defence of Poetry*, p. 11.

> The desire of the moth for the star,
>   Of the night for the morrow,
> The devotion to something afar
>   From the sphere of our sorrow.

If at times he sings with "beating heart and streaming eye," more often, in his own unapproachable description, he is

> A pard-like spirit beautiful and swift—
>   A love in desolation masked—a power
> Girt round with weakness.

And thus the *Prometheus* is a dramatised succession of glimpses, transient, dazzling, half-revealed, into a philosophy which finds in life an inexplicable secret—the riddle of age-long pain, captivity, and oppression refigured in the *Triumph of Life*—and crossed by those hints and presages which in the revelation of Christ, Prometheus, or Demogorgon, still sustain man in the resolve

---

* E. Caird, *Evolution of Religion*.

To suffer woes which hope thinks infinite;
To forgive wrongs darker than death or night;
  To defy power which seems omnipotent;
To love and bear; to hope till hope creates
From its own wreck the thing it contemplates;
  Neither to change, nor falter, nor repent;
This, like thy glory, Titan, is to be
Good, great, and joyous, beautiful and free;
This is alone Life, Joy, Empire, and Victory!

Prometheus represents in terms of Shelley's consciousness the highest spirit of man, the spirit of aspiration and endeavour, which through countless rebuffs and sufferings, has sustained the hope and dignity of the race, and as the higher genius of humanity still volunteers for torments of deliberate disinterested suffering, upborne by an inward assurance of eventual deliverance and redemption. The *Furies*, that torment the martyrs of humanity, are the various forms of moral degradation, which still continually beset even the noblest, and sully them with their own foulness—

Methinks I grow like what I contemplate.

Under the assaults of these besetting powers of evil, Prometheus has never yet attained the final deliverance that awaits him and whose advent is near. The progress of the centuries has by degrees evolved in him the perfected *spirit of love*—till at last he has power to testify

I wish no living thing to suffer pain.

The words and tenor of the olden Curse, heard by hill and spring and whirlwind and all powers of nature, have passed out of mind and memory, and in the soul purged of bitterness, all promptings of contempt or wrath have died away. At last 'Wisdom, Courage and long-suffering Love' are incarnate in man. Patriot, altruist, philosopher and poet have at length attained.* Or rather they are now upon the eve and verge of attainment. For in the thought of Shelley man has as yet failed in his highest possibility, of deliverance from evil. It was with Shelley a cardinal belief that man could *will* himself clear of evil, and in perfecting himself perfectionise all Nature with him. That is the advent of Demogorgon, the epiphany of the Spirit of Eternity, at the coming of the Hour. Already its approach was audible. 'This age,' he writes, 'like that of the Reformation, seems to be one of the great climacterics of the World.' 'Great writers of our own age are . . . the companions and forerunners of *some unimagined change* in our social condition. . . . . The cloud of mind is discharging its collected lightning, and the equilibrium between institutions and opinions is now restoring or is about to be restored.'

---

* This is the song of the Four Spirits in Act I.

SPIRIT I.

On a battle-trumpet's blast
I fled hither, fast, fast, fast,
Mid the darkness upward cast.
From the dust of creeds outworn,
From the tyrant's banner torn,
Gathering round me, onward borne,
There was mingled many a cry—
"Freedom! Hope! Death! Victory!"
Till they faded through the sky.
And one sound, above, around,
One sound, beneath, around, above,
Was moving; 'twas the soul of Love;
'Twas the hope, the prophecy,
Which begins and ends in thee.

SPIRIT II.

A rainbow's arch stood on the sea
Which rocked beneath, immovably;
And the triumphant storm did flee
(Like a conqueror, swift and proud)
Between,—with many a captive cloud,
A shapeless, dark, and rapid crowd,
Each by lightning riven in half.
I heard the thunder hoarsely laugh;
Mighty fleets were strewn like chaff,
And spread beneath, a hell of death,
O'er the white waters. I alit
On a great ship lightning-split;
And speeded hither on the sigh
Of one who gave an enemy
His plank, then plunged aside to die.

Spirit III.

I sate beside a sage's bed,
And the lamp was burning red
Near the book where he had fed;
When a Dream with plumes of flame
To his pillow hovering came.
And I knew it was the same
Which had kindled long ago
Pity, eloquence and woe;
And the world awhile below
Wore the shade its lustre made.
It has borne me here as fleet
As Desire's lightning feet:
I must ride it back ere morrow,
Or the sage will wake in sorrow.

Spirit IV.

On the poet's lips I slept,
Dreaming like a love-adept,
In the sound his breathing kept.
Nor seeks nor finds he mortal blisses,
But feeds on the aërial kisses
Of shapes that haunt thought's wildernesses.
He will watch from dawn to gloom
The lake-reflected sun illume
The yellow bees in the ivy-bloom,
Nor heed nor see what things they be:
But from these create he can
Forms more real than living man,
Nurslings of immortality.
One of these awakened me,
And I sped to succour thee.

Asia, the bride of Prometheus, severed from her consort during the dispensation of trial, is the ideal or suprahuman Love, to the vision and recollections of which (as in Platonic teaching or in Wordsworth's *Intimations of Immortality*) the highest within us continually turns for solace and sustainment, amid the stress of shortcoming and discomfiture. Asia waits separate, unseen, afar; and her sisters who are with us, Panthea and Ione – spirits of gentleness and sympathy and love of kind and ministering pity, and pained aversion from evil, and all gentle thoughts (short of the highest Ideal Love) with which man's unemancipated spirit has communion, 'the messenger between the soul of man and its ideal'—communicate from time to time with Asia (the Ideal Love), who 'sick with hope' yet upborne by the intimations which Panthea brings, as 'the shadow of the soul by which I live,' awaits the consummation of reunion, and gains from the Spirit of Eternity assurance of the eventual redemption of man. Nature, organic and inorganic, will share his regeneration. In the new heaven and the new earth, love will be the universal law, 'making the reptile equal to the god.'

All things had put their evil nature off.
I cannot tell my joy when o'er a lake,
Upon a drooping bough with nightshade twined,
I saw two azure halcyons clinging downward,
And thinning one bright bunch of amber berries
With quick long beaks, and in the deep there lay
Those lovely forms imaged as in a sky.—*P.U.* III, iv.

In that day the Voices of Nature, the Chorus of the flying Hours, and the Spirits of the Mind join in Promethean harmony, and the intercircling Earth and Moon will sing for joy

As in the soft and sweet eclipse
When soul meets soul on lovers' lips.

Jupiter is contrast, not counterpart, to the Zeus of Aeschylus. The *Prometheus Unbound* is in this respect the poetic expansion of *The Necessity of Atheism.* The Idea of God, as popularly understood, to Shelley embodied and expressed bigotry falsehood and superstition, forms of mental and moral subjugation, that held man back from his deliverance. The overthrow of Jupiter was the indispensable prelude of redemption. *Within* man, he creates and commissions the Furies, the ghostly enemies that torment mankind, offspring 'of the all-miscreative brain of Jove,' perversions of human will and affection and emotion into forms of moral ugliness: *without*, the whole order of Church and State—'thrones, altars, judgment-seats, prisons,' and codes—are the engines of his tyranny, and the deliverance of Prometheus entails their abrogation. There are passages in the *Prometheus Bound*, in which Zeus is assailed with scornful execration. But there is this marked difference, that whereas in Aeschylus the scorn and defiance are dramatic, and in the sequel atoned by reverence and reconciliation, in the *Prometheus Unbound* the poet identifies himself with his protagonist, and the poem is a passionate outpouring of Shelley's hates, despairs, and hopes for humankind. Each poet is conscious of divorce between current creeds and the demands of moral and intellectual freedom; but Aeschylus deliberately places protest and reconciliation in the past, and assumes its operative unannulled validity, while to Shelley martyred humanity still stands riveted in chains, and Prometheus is only by prophetic anticipation Prometheus the Unbound.

The main contrast may be variously formulated. For Aeschylus reconciliation lies in the past, for Shelley in the future—and, as another eighty years attest, in a future that is ever receding. We are travelling still

> In the dim night of this immortal day.—*P.U.* IV.

With Aeschylus man's promise lies in conscious covenant of man with God; with Shelley in the supersession of all present thought of the divine. To Aeschylus the history of man is the realisation of progressive order—the reconciliation of justice with power, the identification of Might with Right. To Shelley it is the protraction of man's agony, with far-off dim surmises of some harmony for ever unattained. Aeschylus perceives salvation in the identification and prevalence of Law and God—bondage is resolved in order. Shelley perceives salvation in the extinction of both, in man 'exempt from awe, worship and degree;' bondage is resolved in anarchy. Each is of his time, voicing the spirit, or some part of the spirit, of his age. Aeschylus is the man of Marathon, elate, the enfranchised patriot; Shelley is, born out of due time, the child of Revolution, 'a Love in desolation masked,' an exiled visionary.

Viewed from the moral side, and apart from more vital considerations of literary worth, the poetry of Aeschylus is the poetry of hope, of militant and almost of triumphant attainment. God is guiding visibly the destiny of man. He stands assured of a theocratic order of the world, and the eventual justification of the righteous. Greece, following justice, attaining wisdom, realising law, and so entering into freedom has overthrown the hosts of Persia, the embodiment of bondage, savagery and brute force. Suffering, erring man, *not* surrendering free-will, but conforming it to the manifest and august design of the World Order, is taking up his heritage of happiness and power, and realising a true *Civitas Dei* upon earth.

Visibly, consciously draws nearer the divine event, to which the whole Creation moves. The poetry of Shelley is not the poetry of realised freedom and confident hope, but the highly sensitive poetry of protest, of anarchy, and of revolt. It builds on an assumption, which the ever-accumulating weight of experience refutes. *Morally*, its influence and fascination lie in sympathy with man's unsubjugated aspirations, in ardour for advance, for growth, for liberty ; in impatience of tyranny, in willingness for martyrdom. What is chiefly lacking is the inner note of confidence, the calmer faith in a progressive Redemption, and any guarantee that the pain, the passion, the discords, and the striving will find eventual satisfaction or ever usher in a reign of Demogorgon. Yet across the centuries the poets join hands in a true spiritual accord, and testify that temperament and time and place and custom and creed, however widely sundered, cannot estrange the unity of hearts heroically sure of the ultimate destiny and dignity of man.

IN MEMORY OF HENRY HUGH HIGGINS.

By Sir EDWARD RUSSELL.

You will all agree that it is a very gracious office that has been imposed upon me by the kind suggestion of the President. My only demur arises from the knowledge that I am wholly unacquainted with those subjects of natural science which were the principal occupation of our lamented friend's life. But I reflect that Mr. Higgins's main office was to commend the themes and inferences of physical science to popular interest and acceptance. As one of those whom he sought—more or less vainly, but still evoking from them some appreciation—to attract and enlist; and as one who conceived for him an affection which was the warmer because it was discerning and discriminative; I hope I may speak with somewhat of representative authority. And where I cannot speak with any authority whatever I have been very nobly helped.

I shall say nothing in mere compliment. My words will not be sheer eulogy, though they will on the whole be words of encomium. Henry Hugh Higgins, so far as I have observed men, was a unique personality. A unique personality is no fit subject for conventional praise. We who knew him desire to record what he was. The reasons alleged why a man is what he is vary in character and justification with the individual strength and originality of the man. Some men are quite adequately accounted for by the circumstances in which successively they have lived. Some part of every man must be so accounted for.

But if a man, either by heredity direct or re-appearing, or by the operation of important converting conceptions, becomes powerfully individual, he is much more likely to use circumstances than to be moulded by them.

Perhaps the only circumstances of Mr. Higgins's life that permanently affected his character apart from the strong will, as it were, of his convictions—which strong will and passion of his special convictions I hold to have been a very distinctive thing in him—were those of his early life. To look at him as most of us knew him, he was the least likely of men to be addicted to field-sports; but he was a man of surprises. I recollect hearing quite late in his life that a young member of the Art Club, who was not acquainted with Mr. Higgins, happened to play a game of billiards with him, expecting an easy victory. That young man remarked, on retiring from the contest, that he would not again challenge a venerable clergyman without first knowing something of his prowess. Whether Mr. Higgins ever indulged in sports of the field after he had settled down to his life-work I know not, but it is certain that he acquired in his youth, on his father's estate in Bedfordshire, that bent for natural history which governed the course of his studies.

I may remark that never was anyone less like a Liverpool man, and never one so little like a Liverpool clergyman, though he was long an active participant in both lay and clerical Liverpool life. Here came in that intuitive force of will, under the control of distinct preference, which rendered Mr. Higgins the maker of his own character.

To a certain extent I am the editor and compiler, rather than the writer, of these notes which are to be our memorial of this excellent and distinguished man, thrice President of our Society; and I am glad to give place for a few moments to Dr. Nevins, who is able to record from recollection facts which came early to his knowledge, partly by report and partly by observation.

You will soon notice that Dr. Nevins plunges plainly into a frank revelation of Mr. Higgins's religious, or theological position; and without a clear statement of that no account of him could be characteristic :—

> In recalling my recollections of the late Rev. H. H. Higgins, which go back for nearly half-a-century, it is necessary to revert to a period previous to my personal acquaintance with him, in order to throw light upon some features of his character which made him a marked man, even at that time, and have occasioned criticisms not always favourable.
>
> His father, John Higgins, Esq., of Turvey Abbey, Bedfordshire, D.L. and J.P., was a man of county and territorial influence, and he was also a man of strong character and will, and was deeply imbued with the severe and narrow aspect of Calvinistic Evangelicalism as it was exhibited in many excellent men of his time. Under this powerful influence young Higgins unconsciously grew up in the belief that this narrow and severe creed was the only true form of orthodoxy, and almost of Christianity itself, and although his mind was influenced to some extent in a different direction by his mother, it was to a very limited degree. She was a woman of a gentle loving disposition and was what would now be called "broad" in her religious views, but her yielding character gave way to the stronger features of her husband's, and it was his tone of thought and belief which really stamped itself upon his young son Henry.
>
> As, however, the youth grew up towards manhood, his field of view was enlarged by his University experience and training at Cambridge, where he took his B.A. degree in mathematical honours, in 1836. In after years, when he had long been an ordained minister of the Church of England, the contradiction which had arisen between certain of her publicly recited formularies and his own belief was for many years very painful to him. It is true that, as age advanced, he found that some of the rigid tenets he had been taught in his youth allowed of wider, more merciful, and more spiritual interpretations. But it was not until comparatively late in life, in fact not till long after he came to Liverpool, that the natural growth of an ever receptive and sympathetic mind, continually broadened by the study of science and the needs of his fellow men, and, to the very end of life, "still climbing after knowledge infinite," completely relaxed the

grim fetters of much of his early theology, and he became—what he remained to the end—a "Broad" Churchman.

In 1838, Mr. Higgins was ordained deacon by the Bishop of Rochester, and his first curacy was in an outlying mining district near Wolverhampton; and here his energy and interest in all classes of the community were early and strongly manifested, for he commenced the practice of meeting, soon after five in the morning, the colliers on their way to the pits for six o'clock, and held a short service with such as were inclined to assemble with him. He also devoted himself heartily to the Sunday Schools in which the children of the colliers, artizans, and other classes met; and the relations of confidence and mutual attachment thus formed proved to be very enduring, for it was no uncommon thing for some of his old collier parishioners to go to visit him at Rainhill on a Sunday during his residence there, which did not commence until twelve years after his connection with them in Wolverhampton. And when his ministry in the Black Country ceased in 1841, he was presented by the children of the Sunday Schools there with a Bible bearing an inscription expressive of their attachment, which he kept to the day of his death among his most valued treasures.

In 1842, after taking his degree of M.A. and being ordained Priest, he was invited by the Rev. Mr. Barker, Vicar of Edge Hill Church, to come to Liverpool and undertake the office of Inspector of the Church of England Schools in the town, some of which at that time were supported by the Corporation, in addition to those supported by the National Society and private subscriptions. Mr. Barker, who afterwards became Bishop of Sydney in Australia, was a prominent and leading evangelical in Liverpool, and his selection of Mr. Higgins indicates the School of Church-thought with which at that time Mr. Higgins was most associated. I may here recall an almost forgotten *jeu d'esprit* of the time. Mr. Barker being a most pronounced *Anti*-High Churchman, was commonly called "the 'High Priest' of Edge Hill," as a pleasantry upon his evangelicalism and his personal height, he being 6 ft. 3 inches tall, and erect and stately in his gait and bearing.

As this school duty did not involve Sunday work Mr. Higgins became Curate for Sunday Services to the Rev. Haldane Stewart of St. Bride's Church, who, like Mr. Barker, occupied a position in the town as a typical evangelical preacher. This office Mr. Higgins retained for a few months, until Mr. Stewart's son was ordained, when he became his father's curate, and Mr. Higgins then took charge of Trinity Church for two years. In 1846 he became curate for Sunday work to the late Rector Campbell, whose duty was confined to St. Nicholas' Church. The other rector (Rector, afterwards Archdeacon, Brooks) took the duty at St. Peter's Church, the parish at that time having two rectors, though it was only one parish. At that date the old fashioned three-decker still survived in St. Peter's, and the parish clerk still *led* the congregation in singing the old and new metrical versions of the Psalms, if he did not, indeed, *constitute* the congregation as a vocalist. But in St. Nicholas' the practice had been commenced of having a choir under the conductorship of the late Mr. Sudlow of the Philharmonic Hall as organist, and in having an Anthem and an attempt at a regular Choral Service morning and afternoon. At that date evening services were unknown in country places, and were far from universal in Liverpool, and it was not until many, many years after this period that Rector Campbell could be induced to permit an evening service in St. Nicholas'. It was foreign to all his traditions, and he regarded it as a novel and a dangerous innovation.

These circumstances, however, left Mr. Higgins at liberty for Sunday evenings, while at the same time they brought him into contact with a cultivated organist and a choir also at liberty in the evening; and this similarity of circumstances and tastes brought about another change in Mr. Higgins' position. He was throughout life an ardent lover of music, in which some of his family inherit his tastes, and his connection with the Church Schools in the town brought him under the notice of the late Mr. Winch, who was the main prop of the *Female* Orphan School in this town—at that time the only one of the three Orphan Schools now familiar to us. The building now called Hope Hall had previous to that date been the private property of a noted Methodist revivalist—Mr. Aikin—who then conducted Methodist Services in it, but afterwards left Methodism and became ordained as a Clergyman, and desired to sell the building. It was accordingly bought, and was licensed by the Bishop of Chester (at that date Bishop of Liverpool also) for Church Services under the name of "St. John the Evangelist," and Mr. Winch rented it as the Chapel for the Female Orphan School, though open to the public also, whose pew rents contributed towards the funds of the school. Here Mr. Higgins at once introduced the system of a Musical Service. He himself intoned the service—Mr. Sudlow volunteered to be unpaid organist; Miss Stott, the principal soprano singer in St. Nicholas' choir, and long a universal favourite in Liverpool, also gave her services, as did other members of the choir, and as near an approach to a Cathedral service as practicable was the result. A system of collections at every service was also commenced, and the plate was held at the door by a young merchant of the town, the late Mr. J. Myers, whom no one ventured to pass without paying toll, which custom had fixed must be silver. The novelty of the Musical Service, the convenient situation of the Church, and the unhackneyed character of Mr. Higgins' sermons, soon rendered the Church a quasi-fashionable one; and when a stranger coming to Liverpool inquired where he should go to Church on the Sunday, the answer was "Oh, you must go to hear McNeile in the morning, and go to the 'sixpenny concert' in the evening," this being the pleasantry attached to the silver collections at the door, and the unusual circumstance at that time of a Musical Service in a Church. It is true that the Chapel for the Blind had a Musical Service and constant anthems by the blind, but custom at that time required half-crowns at the collection there as a rule, (florins were not then in existence), shillings were looked upon askance, and the man must have been brave indeed who would then have ventured to drop in the humble sixpence.

During his tenure of this office the Corporation grants to the schools were reduced or discontinued, and the office of Inspector of the Church Schools eventually ceased to exist; but Mr. Higgins' devotion to the promotion of education led him to form classes of young ladies whom he trained as Sunday School Teachers, and also instructed in more advanced general literature than was at that time customary in schools. For such an office he had some unusual qualifications in his early associations at Turvey, and in a journey which he made in 1848 to Palestine, Sinai, and Egypt in company with his elder brother, the late Charles Longuet Higgins, M.A., "The Good Layman," in his brother-in-law the late Dean Burgon's *Lives of Twelve Good Men.* Such a journey was at that time an almost unheard of undertaking among Englishmen, and the interest which it awakened in him, and the knowledge it imparted, added to his university training, qualified him in an unusual manner for arousing interest in others, and imparting vitality to the records of scenes in the Holy Land, recorded, indeed, in the narrative of our Lord's life, but not always realised by the reader of the New Testament, and therefore impossible of lively representation to the classes in ordinary Sunday Schools.

In such occupations Mr. Higgins passed a useful and acceptable life in Liverpool until the death of Mr. Winch involved the necessity of closing the tenancy of St. John's Church, and terminated Mr. Higgins' connection with it as Chaplain to the Orphan School. After his marriage, in 1852, with Anne, daughter of John T. Gouthwaite, Esq,, B.A., of Christ's College, Cambridge, he removed from Liverpool as his residence, to a new sphere of duty as Chaplain to the

Asylum at Rainhill, which brings him down to a date known to most of the members of the Literary and Philosophical Society—of the Naturalists' Field Club, of which he may almost be called the founder—and of the Microscopical and other Societies in Liverpool in which his untiring energy was ceaselessly occupied for a period extended much beyond the length of an ordinary active life.

This may be a convenient point at which to note one or two facts of miscellaneous interest. As to Turvey Abbey, the birth-place of Mr. Higgins in January, 1814, and associated through his family with recollections of the poet Cowper, the beautifully illustrated account given in Harvey's *History of the Willey Hundred*, published by Messrs. Nichols, Parliament-street, London, will be found well worth looking at by all his friends. With Turvey another Liverpool clergyman was connected, for it was in that living that Legh Richmond, the author of *The Dairyman's Daughter*, spent the latter portion of his life. Among Mr. Higgins's Liverpool honours and spheres of usefulness must be reckoned his position as Derby Trustee. In connection with this Society it is notable that he was President in its Jubilee year, 1862. And a remarkable circumstance is that his first Inaugural Address as president was delivered in October, 1859, and was "On the gradual disappearance, before the light of increasing knowledge, of limits and distinctions which were formerly supposed to be exact and permanent." He dwelt in this address considerably on the increasing difficulties attending the making of exact distinctions of Species, and some better able than I to pronounce consider it noteworthy that an address with such a title was given in the very month in which *The Origin of Species* made its first appearance. He evidently had not seen the book before he gave the address. On one occasion he associated himself with our staple trade by lecturing with great success on cotton before the Cotton Brokers' Association.

Among the many testimonials he received during the latter portion of his life, two are perhaps worthy of special mention. In September, 1874, he was presented by the Liverpool Naturalists' Field Club with a gold watch, a valuable microscope, and the study table at which he was writing when the sudden "clear call" came for him in the twilight of Sunday evening, the 2nd July last. On the 17th December, 1886, a few weeks after resigning, through increasing age, his active ministry in the Church, he was presented at the Liverpool Town Hall, the meeting being under the presidency of the Mayor, with a splendid skeleton clock and a purse of £144, in recognition of his long public services to the city. In 1876 one of his life-dreams was realised, and, like his friend Charles Kingsley, he "At last" saw the wonders and beauty of the tropics. This five months' voyage resulted in the publication of his *Notes by a Field Naturalist in the Western Tropics* (Edward Howell, Liverpool, 1877). My last of these miscellaneous notes has to do with Mr. Higgins's beautiful little sermons. It is said of a preacher of this district, himself a man of fine culture, that he has several times preached one of these sermons to his people, first, of course, indicating its author: a tribute of very earnest admiration, which the charm of these discourses might well invite from any preacher original enough to pay it.

One of the surprises which is afforded by our retrospect of Mr. Higgins's life is the fact, which might have been put even more strongly than Dr. Nevins puts it, that at one time Mr. Higgins was first favourite in Liverpool as a fashionable clergyman, preeminently acceptable in society. To the last, as we all know, he had a charming gallantry of address in conversing with ladies; but life grows more serious as public men grow older; a time comes even for those most alert in their sympathies to be preoccupied with their own ideas, rather than perfectly prompt and facile in entertaining, as gallantry and sociality requires, those which are occupying the minds of others, casually encountered. Mr. Higgins would have suffered as little as any man in this way even to the last, if his hearing had remained more perfect. Those whom he heard thoroughly and who thoroughly heard him found him always as ready to bear a successful part in graceful miscellaneous conversation as the cleverest men far his junior. But each generation judges of a man as in the ordinary not very close intercourse of life he appears. Even the summer days of the old Field Naturalists' Club are receding into a dim past for many who enjoyed them, and it is a new idea to conceive our venerable friend in the still earlier days of the Young Ladies' Classes, of which Dr. Nevins has spoken, when every young lady brought a bouquet every time, and made the teachers' room a bower, and that in days when the copious use of flowers as we have it was neither born nor thought of.

The truth is that, in the best sense, he was a very courtly man. As was said of him by the *Liverpool Daily Post*—"No man could compliment better. He never needed to turn a compliment. His generous appreciation conveyed to anyone he was addressing, in terms fit and choice, a gratifying apprehension of what was best in him or her." And the same article told a story which showed that in this the child had been father to the man: "When he was about six years old, Lord and Lady Tavistock—afterwards Lord John Russell's Duke and Duchess of Bedford—were calling on his father and mother. The little gentleman was by way of being a bit of a prodigy, and was much noticed. Stuffed birds were rife among the Higginses even then, and out of one of these an eye had dropped on to the floor. Lady Tavistock picked it up, and said jokingly to him, 'Here, Harry, here's an eye. Is it yours?' 'No, my lady,' said the little fellow, 'if you had found a heart it might have been mine!' Henry Higgins never lost the gift of being expressive in his kindliness, nor the better gift of being kindly."

But it is time more definitely to record his public services. These he rendered for forty years without fee or reward. No one was more generous. He behaved like a prince as to money, though he was never rich. While he was Inspector of Schools, the Church of England Society outran its resources, and there was some thought of giving up one of its schools. "Don't give up the school," said Mr. Higgins, "stop my salary." Again, after returning from the journey he made to the Holy Land with his brother, then lord of the Manor of Turvey, he delivered a course of six lectures at what was then called the Collegiate Institution, in Shaw Street. The course brought him in £300—a sum that no lecturer need hope for now; which suggests that fashions change, even though society does not deteriorate. Mr. Higgins at once handed over the amount to his old Church of England Education Society.

It is one of the paradoxes of morals that good men do not really feel self-denial. Like all paradoxes it is untrue. The best man, even though he be aflame with philanthropy, cannot pursue a long life of labour and self-abnegation for others without many a spell of weariness and many a pang of deprival; but there is no doubt that our lost friend found a constant joy in his instinctive altruism which infinitely overpaid him. It was a delight to see his delight as he lay in wait at the Museum for signs of interest in those who came to see the treasures there collected. Incompetent as I am to speak of his scientific value as a cicerone, I can testify that the whole place took a new tone and became glorified by his animation and simple enthusiasm when he took a visitor in hand. And though he was seen in so many places the Museum was his second home for about forty years. His Handbooks had an enormous sale, and while he often confessed himself discouraged, the people must have been innumerable whom he inspired, for a time at least, with his own glad interest in Nature.

Of the Royal Institution, of which he was President, he was similarly a friend—almost the last of a generation whose fidelity to the things centred here compose a chapter that may never be repeated in the history of this city. It is certain that there are amateurs in several branches of science and literature doing very good work, just as one is sometimes told that there are preachers continually addressing crowds greater than Wesley or Whitfield ever preached to; but the fact remains in both cases that the general unattached people are not impressed and attracted as formerly. The burning desire of Mr. Higgins was to prevent natural history from being caviare to the general.

There are no doubt at least two ways of considering Museums, and there have been occasions in this Society when they have been placed in competition by Mr. Higgins and advocates of a newer, less merely popular, and stricter system. In earlier days there was a sort of jollity in the amateur pursuit of learned and scientific studies which has now disappeared. Our friend Mr. Birchall has found for me two amusing instances of Mr. Higgins dropping into poetry of a quite convivial kind. In fact he himself sang one of these lyrics at a dinner of this Society—it used to have dinners—at Childwall Abbey, in 1861. It has a refrain, bless you, and everything suitable and appertaining. I have no doubt each stanza wound up with a jolly chorus:—

Composed by H. H. H., and sung by him at a Banquet of the Literary and Philosophical Society of Liverpool, Childwall Abbey, 1861.

Enough of philosophy, letters and science
Away with the ologies, smile a defiance
At physics, to classics cry *satis superque*,
Are bent on amusement, and not upon work we.
Philosophers all, respond to the call
To banish the spleen and good humour recall.

Now the Lit. Philosoph. our esteemed Alma Mater
Is constitute, Gentlemen, not to o'errate her
Merits, but simply to claim her distinction,
Of savants, whose lustre need fear no extinction.
Philosophers all, etc.

A bumper let's fill to our active hon. sec.
Than his grandsire, a braver man ne'er trod the deck,
But little he dreamt as he fought his big gun
That a following Cuthbert * himself should be one.
Philosophers all, etc.

A hearty accord to our friend of the Fauna †
Whose skill anatomical serves to adorn a
Sodality learned: setting discord afar,
He extracts from each member the sinews of war.
Philosophers all, etc.

A gallant vice-president,‡ valorous quite
With levity strange, makes of batteries, light,
Not *ex fumo* precisely, but that to surpass
Ex vacuo! barring a trifle of gas.
Philosophers all, etc.

---

* Dr. Cuthbert Collingwood, Hon. Sec.

† Isaac Byerley, Hon. Treas.

‡ Dr. Edwards, Analytical Chemist, a notable officer of volunteers, notable also for his splendid experiments in the illumination of vacuum tubes by a current of electricity.

A critic we claim of such wondrous acumen,
At the stroke of his pen, the old writers seemed new men.
His illustrious name from the wish none will vary
Hoc tempore dextro, cretâ per-notare.[*]
Philosophers all, etc.

We've a gallant V.P.[†] who is known by the name
Of a glorious hero of Waterloo fame:
That he's popular even a doubt cannot creep in
The good books of the public no one is more deep in.
Philosophers all, etc.

To show science in sport was one member's praxis
By a run with the Fox[‡] to the magnetic axis:
He may have returned with a frost bitten part
They do say, at all events, t'was not his heart.
Philosophers all, etc.

Another who dotes on Silurian rock[§]
Conservative, prizes chips of the old block:
Strange fact, though his suavity's ne'er known to halt
Very few are so keen at detecting a fault.
Philosophers all, etc.

We have statists, philologists, mathematicians,
Aerologists, botanists, metaphysicians,
But time fails to sing all the names great in lustre
Of members who meet, when in session we muster.
Philosophers all, etc.

Still to wish all prosperity we'll not delay
To our blooming young sister,[||] cradled in May;
The ladder of fame she is safe to surmount,
With the aid of a Banister turn'd to account.
Philosophers all, etc.

[*] William Ihne, Ph.D., ex-president. Last line translated by H.H.H., thus:

"On this auspicious occasion,
emphatically to mark with a white stone."

[†] Sir J. A. Picton.

[‡] David Walker, Naturalist on board H.M.S. *Fox*, Arctic Seas, reported to be engaged to be married.

[§] G. H. Morton, F.G.S.

[||] Liverpool Naturalists' Field Club, constituted, 1860, Rev. W. Banister, Hon. Sec.

Long live our Society, still may it flourish,
The love of philosophy ever to nourish
Thus ends my attempt which I fear is but shabby
At a song for our visit to famed Childwall Abbey.
Philosophers all, etc.

Encouraged by these sportive lays, the Literary and Philosophical Society, still preserving pleasant Roscoe and Shepherd habits which are memorialised, if I mistake not, by Sir James Picton, met again, met annually, to dine and to descant. In 1862, Mr. Higgins merrily fought out a battle of precedence between Clio and Urania.

CLIO AND URANIA.

An historic ode dedicated to the members of the Literary and Philosophical Society of Liverpool, at their Annual Dinner, June 9th, 1862, by H. H. H.

Air: "Caput apri defero."

Think not Olympian heights are free
From strife, sharp hits and repartee
Ere points of precedence are settled
Divinities are sometimes nettled.
Pooh! Pooh! what an ado!
Which goes foremost, I or you?

Fifty years back or more, I ween,
On high occurred another scene,
In fact it was a wrangling mania,
Twixt Muses Clio and Urania.
Pooh! Pooh! etc.

Each Goddess claimed the higher place
Of honour from the human race:
Clio on learning put reliance,
Urania pleaded hard for science.
Pooh! etc.

With scornful air Clio began,
The study for mankind is Man!
What can you teach that's worth attention,
Or with my themes will bear a mention!
Pooh! etc.

Softly! rejoined the sister Muse
Nor my exalted task abuse:
What countless fibs have you to swallow,
Whilst nothing but the truth I follow!
Pooh! etc.

Your modesty I cannot blame;
Monopoly of truth you claim?
Said Clio, "I like that idea"
Stargazing's up! amica mea.
Pooh! etc.

I thank my stars for loftier views
Than you can boast, replied the Muse
Of science: yet the heavens foregoing,
Earth's wonders oft I take to showing.
Pooh! etc.

Sticks, stones and bones your themes, no doubt
Retorted Clio: these I scout.
Subjects more generous delight me,
Heroes to sing their deeds invite me.
Pooh! etc.

'Tis true, Urania replied
Still there is little room for pride;
Untaught by me your cavalieroes
Would be bnt savages—not heroes!
Pooh! etc.

None knows how long they might have fought
Had not a sudden happy thought
Arisen with friendly intervention
And put an end to their contention.
Pooh! Pooh! aught cares who?
Which goes foremost, I or you?

Prithee our quarrels let us doff
And found A LIT. AND PHILOSOPH.
Wherein our honours shall be equal,
Enough, my friends, WE are the sequel.
Pooh! Pooh! no more ado,
Hand in hand, hail we the two.

The lives of Societies, as we have said of the lives of men, get more serious as age increases, and we must accept the necessity of our Society and our Museums being more systematic and scientific if they are to retain the respect which they aforetime gained on easier terms. And this leads me to introduce a memorandum most kindly furnished to me by Professor Herdman. He writes :—

> Mr. Higgins has been of great service to the Museum, and to the cause of Natural History in this town, during the last thirty or forty years. He maintained, at a time when he was working in the interests of Science almost single handed, and when it must have been very difficult uphill work, the dignity and high position of Science, and the educational value and interest to the public, of a high-class and well arranged collection of natural objects.
>
> He has conferred great benefit during a number of years upon the Museum, by having the chief hand in directing the wise expenditure of public funds. By his personal energy in hunting up dealers and collectors, by getting into touch with importers, and by taking steps to hear of any special rare animals brought into the country, and by being prepared to pay promptly, he was able, I believe, on more than one occasion to compete successfully with the authorities of the British Museum and secure for this town specimens which would otherwise have gone to London.
>
> The fostering care of the late curator, Mr. T. J. Moore, and of Mr. Higgins, have brought the collections of vertebrate animals and of certain groups of invertebrata to a high state of perfection, and it is devoutly to be desired by those who have the best interests of our public museum at heart that a highly trained scientific curator or director will soon be appointed who will be able to develop the remaining sides of Natural History, and illustrate the more recent discoveries in Biology, in a manner worthy of exhibition alongside the work which we owe to the loving care of Mr. Higgins.

Dr. Herdman was not of opinion that this would be a suitable occasion to press his views as to what a Museum should be; but it may be useful to recognise at this juncture those views, because we cannot but feel that we may now be at the parting of the ways. In volume xli of our *Proceedings* (1886-7), pp. 61-81, there is a critical essay on the subject by Professor Herdman which should now be recalled. The only important point left out of consideration in that paper is that of the curator, and at the present moment the professor writes to me as follows:

> The Museum here is chiefly a Natural History Museum. It is one of the best in the country, but not quite up to date, and it would be a thousand pities that it should be allowed to remain as it is and not advance with the progress of science as the other leading Museums in the country are doing. There has been a great change during late years in Museums and in the type of man chosen for Museum Curator in the best Museums, such as those of London, Edinburgh, Dublin, and Manchester. It is coming to be recognised that, if the Museum is to fulfil its functions to the community, the curator should be a thoroughly-trained scientific man, who could make the Museum reflect and expound the latest scientific discoveries, and be a centre of scientific activity in the town. The Museum which does not advance with the times is bound to lose its influence for good in the community.

My personal voice can have no weight in such a matter, but as by profession and position an outside observer of things which are for the interest of the community I may at least suggest that all especially concerned in natural science should combine to promote such a re-settlement of the Museum management as, without depriving it of the popular attraction at which Mr. Higgins largely aimed, may secure for it a position worthy of the city and quite abreast of the requirements of the time.

When the journal which I conduct spoke of Mr. Higgins as the last of a line of natural history workers who had made their mark in Liverpool—such men as Mr. Banister, Mr. Frank Archer, and Mr. Norman Tate—I received a very well conceived letter from a scientific worker in which he kindly but firmly protested that there never was a time when more or better work was being done; and he appealed for proof to the *Transactions* of the Biological, Geological, and other Societies. Now it is desirable, not only to continue the succession, not only to gratify the feelings of those who continue it by recognising their endeavours, but to induce them and the University College gentlemen to co-operate in producing the right effect upon those who regulate the destinies of the Art and Science department of the Corporation. I will say frankly that I am not desirous to see all scientific and literary culture swallowed up and digested by University institutions. University dons cannot do a worse thing in the interest of the great studies of which they necessarily have the main charge, than to run down and "pooh pooh" persons whom they are sometimes pleased to term "versatile amateurs." A country which has produced a Lubbock, a Spottiswoode, a Ruskin, an Isaac Disraeli, a Grote, and many other great men from amateur ranks, is not one in which scientific and literary amateurship should be discouraged. But it is the duty of amateurs and professors to maintain co-operatively a high standard, and to afford each other the best possible aid in obtaining from the community such institutions and such assistance as the most approved opinion exacts.

Perhaps one of the best examples of the power of a personality not characteristically academic in winning upon a distinctively professional intelligence was afforded in the beautiful friendship which subsisted between our much lamented friend and our valued member, Professor Lodge, and the highest privilege that is afforded me to-night is to read to you a delightful monograph on Mr. Higgins which Dr. Lodge has most graciously placed in my hands:

> If asked to summarise our old friend's position as a thinker I should say "a Votary of Natural Religion." He was widely interested in science, and keenly welcomed every new advance in any department, but his interest in science was essentially subordinate to its bearing on the meaning of the universe as it appealed to him in its philosophical and religious aspects. Sometimes his touch on subjects bordered on the poetical, but the

adjective fails to give a correct appreciation of his cast of thought; his mind was very analytic, too narrowly or crudely analytic for poetry, he loved to dissect words and phrases and thoughts till he got at their essence; but though poetry was apt to evaporate in the process, the result of his scrutiny was not mere matter-of-fact, (with bare cold facts he had no patience) what he aimed at was the spiritual meaning, the philosophy, the bearing of the thing on our views of God and existence; and this he would state in as plain prose as he could muster.

His attitude to science, and knowledge generally, was, so far as I know, almost unique. His knowledge was wide rather than deep, sympathetic and picturesque rather than accurate and thorough; his attitude to the solar spectrum for instance was typical: he loved it for its gradation of colour, a thing which the ordinary scientific man scarcely thinks of. He kept a prism on his desk so that the sun might display his coloured image on the wall or ceiling whenever it happened to shine, and the mere inspection of the beauty of its colour pleased the old man.

So also a clock, with him, was not a mere uniform mover of practical use, but was a sort of living image of law and ingenuity, a thing whose internal mechanism he delighted to contemplate. In one of his letters to me he throws out casually the suggestive interrogation or as he called it "conundrum"—"Which is the greater wonder, the pendulum or the escapement?" Meaning thereby to hold up to equal admiration the divine or natural law displayed in inanimate nature, and the same law working through and superficially cloaked by the ingenuity of the human inventor and artificer.

To him birds and flowers and insects were not mere species to be labelled and dissected, but were full of warmth and beauty and joy; so indeed was the whole of nature, for to him nothing seemed dead or inanimate. The very atoms were to him each endowed with what he called *Bios*, a very spirit or potentiality of life. Nature was not merely the living garment of God, but was one aspect of the immanent Deity Himself.

Yet this higher pantheism did not destroy or weaken his sense of a personal God. In a letter he says "the immanent life seems to immerge all personality; and so it does of the Ancient-of-days-sitting-on-a-throne kind. But personality *is*: nay, is it not *the* characteristic feature of the universe. Shall the originating life fail in all that is best in personality? He who has ordered the universe on the personality plan!"

Much more I might quote, but that his thoughts are often so elliptically expressed as to be barely intelligible without context or explanation. The Fatherhood of God was to him the keynote of the universe—"Fatherhood is the main specification on which it should be worked out." And another deep saying, the *words* probably quoted, but their thought perfectly assimilated, is this: "There never was a false God,"—meaning, of course, that what men have worshipped has been such portion or aspect of the true God as they were able to recognise.

But in his little volume of *Sermons, Broad and Short*, his theological position is clear enough, and it is all based upon intense appreciation of and sympathy with Nature, especially animate nature. To him revelation is not a completed book, but a living vivid reality, running through every œon of the past and every hour of the present. An optimism, perhaps exaggerated, but clear, intelligent, and reasoned, saturates his mind; he will not even allow that Nature is cruel; and the problem of Evil he seeks to solve by regarding it as the absence rather than the antagonist of good. He likens it to darkness as compared with light, to silence as compared with sound, thus suggesting that it is merely negative or imperfection.

So Browning in Abt Vogler:—

> "For the evil is null, is nought—is silence implying sound."

The Manichæan doctrine of an antagonistic power, or Mill's doctrine of a limited or deficient power (which in a footnote Mr. Higgins claims is just as fatal to the unity of the universe as an antagonistic principle), he repudiates utterly. To him the Unity of the Universe is brilliantly manifest—"When we cross the river we shall be still in His Hands, for there are no other hands into which it is possible for us to fall." "There is no Antagonism (*i.e.*, final opposition on commensurable terms) in the Universe."

Let me make another quotation, illustrating what I was saying about there being no false God; that, for instance, a savage seldom runs counter to his conception of the moral order, for such conceptions are with him very few; and that his notions of deity are such as he can grasp:—

"According to the measure of the capacity of the receiver—this is the divine rule in conferring the 'unspeakable gift.' A little child does not know God because he can say the creed, but because God has appeared to him . . . in the daisies on the grass-plot, in the gaiety and buoyancy of his own happy child life, in the hushed moment before lying down at night, when the eyes must be closed, and the prattle cease, and sounds be lisped—'Our Father in heaven,' 'Hail! Mary, full of grace,' 'Allah, il Allah'; not yet, oh not yet in the words, but in the hands clasped from play, in the tear of affection that falls from the mother's eye on the little upturned face, God appears to the child, and from heaven falls a gift. Those who think they can describe it, let them do so. To me it seems unspeakable.

"I will ask one question. Because the mother may worship an idol or a false god, does therefore the idol or the false god appear to the child in the mother's love? No, but the true God." *

So deeply was he penetrated with the conviction of a living spirit of love in nature that the temporary drift of modern science into matter-of-fact hardness and unemotional scrutiny was repellent to him. For him the dry light of science had no attractions, the suffusion with warmth and light and love could not wait for moods and occasions—it must be present continually and consciously.

Thus he welcomed Mendelejeff's detection of a singular harmony among the atomic weights of the elements, as if it were a new direct revelation of the manner of working of the Deity. In every department of science, generalisations like this awakened in him the same sort of rapture as that with which Kepler greeted his own discovery of the hitherto unknown harmony among the planetary movements.

"It is no smiling matter," says Mr. Higgins, in a letter to me, "this tendency of science to discover the truth but lose the lesson of love." "Are we idolising the verifiable at the expense of loyalty to humanity? I all but think so. Matter-of-factness is the cynosure." To be able to point an Equatoreal to the new star in Auriga, for instance, without being able to sketch on the blackboard whereabouts in the constellation the star was to ordinary vision, seemed to him terrible.

In his Museum arrangements, the more nearly he could display the ordinary surroundings and life of the creature the better he was pleased. Strict scientific classification was subordinate to this keen interest in the creature's life and environment. The skilfully painted background of the flying albatross, which was done for him *con amore* by Mr. Isaac Cooke, was always a source of delight to him, as no doubt it has been to others to whom he showed it, and as it may be to Museum visitors for a long time.

As I began by saying, his scientific position was an uncommon one. An immense variety of topics occupied his mind at different times, and on nearly all of them he wrote. The things he wrote were always thoughtful, often lucid, usually instructive and thought-awakening; but a professional man of science he was not. The name "amateur" ought to convey no reproach or stigma. Much of the best scientific work in England has been done by amateurs. Bacon was an amateur, so were Cavendish and Priestley and Wollaston and Joule; but our old friend was not an amateur in this sense, his interests were spread too wide; he was not a pioneer in any one science or branch of science, it is not as a scientific man that he is to be judged. His message to us lay rather in his deep love for and fellow-feeling with the workings of nature, his single-hearted sympathy with and appreciation of the progress made by others, his broad and catholic receptivity to new truth.

---

* From *Sermons Broad and Short*,—on "Reasonable Optimism."

He had lived through a most astounding revolution of thought in the relations between science and theology, but no new discovery ever found him irresponsive and unwelcoming; his dogma became fluid and his creed broad, but, so far from shaking, each new discovery seemed rather to strengthen, his simple trusting faith in the essential principle of all religion—the certainty of an abiding power and love at the heart of things.

I wonder if the busy citizens of Liverpool at all knew what sort of man they had among them, in the picturesque old figure, of somewhat slow and deliberate speech, and antique gentle manners, whose blameless life passed in their midst.

Others went before him in the race of scientific discovery; the old school of naturalists, to which he belonged, flourished and became extinct before his eyes, and the modern biologist dominates the scene; but amid all the changes of thought he preserved a serene and dignified, a considerate and courteous demeanour; hopeful and reverent always, living a simple Nature-loving humanity-helping life, keeping his soul unspotted from the world and his spirit young and guileless as a child's,—surely a man of whom Liverpool would have been proud if it could have known and realised him better.

This is a very touching and a very exact account—the more touching because of its exactness, and because of the striking impression made upon the writer of the monograph by the tendency to mysticism which was so conspicuous a feature of Mr. Higgins's mind. Things and conceptions which were indifferent to others were of the first and most possessing importance to him; and at the bidding of the first speculator he passed into a mystical frame as another man would have passed by to the other side. To some his mysticism appeared confusion of mind. It never was confusion. If one had time it was interesting to peer into and gain the clear sense of his meaning, which he never lost. But I will own that one seldom had time except for the simpler and clearer, which were usually the best, of his inspirations. His own *Sermons Broad and Short* were full of these. On the title-page of one series was this fine expression of his purpose: "Dedicated to the promotion of a spirit, towards the Eternal, less confident and more confiding; to the end that 'we should serve in newness of spirit, and not in the oldness of the letter' (Rom. vii, 6)." Never was a noble text more grandly used. And, for the most part, Henry Hugh Higgins lived the life thus perfectly sketched in a terse ideal. If he did not wholly live it—and upon this I only offer an opinion, which is likely enough to be individual and wrong—it was because even he advanced in dogma to over-confidence. He had the best excuse, for it was in "more confiding" that he became more "confident;" but it was a fault from his true point of view.

He became possessed with one or two ideas—Evolution and Heredity in especial. They coloured, nay they made, the fabric of most of his thought and conversation. But there were certain previous questions which he had decided, and which never let him come to a hard and revolting conclusion about nature. It was almost a constitutional impossibility for him to realise sin, and though in cases of individual suffering he was the most sympathetic of men, the indomitable happiness of his mind, and the ease and certainty with which he found honey in all the facts of nature, raised him triumphantly, but as some of us thought non-rationally, above the difficulties which most men feel in the pain and loss and conflict by which the universe is pervaded. He scarcely seemed to need—he was strangely independent of—even that persuasion of the ultimate working out of a general condition of good by which some men are reconciled; and as to those whom even this does not conciliate to the existing dispensation he could not even get on the same level of speculation with them. They talked and groaned. He talked and smiled. They did not understand each other. He could never understand anyone who could not understand nature to be as kindly and gracious throughout as he was.

This was a very winning, but it was not a scientific trait. It was akin to a ready enthusiasm and partisanship which led Mr. Higgins to glorify among his friends authors to whom it was not easy to concede the importance which he assigned to them. There are, especially in the United States, writers, some of true eminence and some not, who in the most confident manner think out *a priori* or *a posteriori*—it does not much matter which—the problems of being. Their wishes are, as a rule, the progenitors of their thoughts. Some of them are scientific on the whole, but give way to the imagination at points. Others are empirical altogether. With our dear friend, towards whom these writers floated by natural attraction, it was enough if they reached from premises of heredity the pious and agreeable conclusions which were his by instinct. They became endowed in his mind with surprising importance. It was not his fault if they did not soar into general acceptance and fame.

For a man of such wide and ready sympathies, Mr. Higgins was probably less distinguished than might have been expected by strong literary preferences or approvals. He valued writings mainly according to the support they gave to his views of natural religion, and to the effect with which they were likely to popularise those views, When he lit upon anything of this description, it became to him for the time the most important bit of print in the world. He walked about with it in his pocket, He pressed it upon the attention of his friends. He seemed to anticipate from it a revolution in public opinion. Some who hear me will remember how remarkably this was illustrated for a time in such instances as that of a sermon by Mr. Stopford Brooke, in which, I think, a Jew and a Greek were supposed to meet in Alexandria in the first century, and talk out the topic of Christianity according to the lights which the preacher thought must have then prevailed. There was nothing in it very new for those who had studied historically the probabilities of Christian origins; but the dramatic and dialectic force of Mr. Brooke's revivification of the past had awakened Mr. Higgins's not very active historic sense, and he was carried away with the idea that this true picture of religious minds in the first century, when Christianity was in the making, would, if it could only be seen by people enough, bring a large proportion of English-speaking mankind to his own condition of enlightenment.

I have said that his historic sense was not active. This used to surprise one, because a ripe and natural historic sense would have helped him greatly in that work of conciliating bitter facts with sweet theories, which should have been a great part of his business if he had gone to work systematically. But so it was. For instance, to the end of his days, one of his horrors was the remorseless 109th Psalm. One may admit that it is not a nice composition to be sung at Evening Service by a mixed congregation to a lively chant. But to a person with a historic sense it represents so large a proportion of what goes on, and goes on with a good conscience, so far as it is by volition in the government of the world, that it can easily be interpreted in such a manner as to express devout feelings of a particular cast.

The simplicity of this distinguished man in such matters was extremely loveable. I remember his coming to me once and taking from his purse or little pocket-book a quotation from Shakspeare. He had long desired to show it to me. It had quite upset him. How were we to think so highly of Shakspeare, if Shakspeare could write what he understood him to have written here? The passage was from the *Winter's Tale*, and is perhaps without exception the most philosophical that ever came from the great poet's pen. Polixenes is having a delightful conversation with Perdita about her garden. She says that there are certain flowers which she does not care to have, because she understands that some of their tintings are due to art in the grafting and the rearing rather than to "great creating nature." Polixenes says there may be something of this kind, but why not?

> Say there be;
> Yet nature is made better by no man,
> But nature makes that man: so, over that art
> Which you say adds to nature, is an art
> That nature makes. You see, sweet maid, we marry
> A gentler scion to the wildest stock,
> And make conceive a bark of baser kind
> By bud of nobler race: this is an art
> Which does not mend nature,—change it rather; but
> The art itself is nature.

What it was that had so enraged my venerable friend I cannot exactly remember. Probably it was a vague indignation at the suggestion that art could improve on Evolution. Now it would have been quite useless to say to him that Shakspeare could not be expected to anticipate Darwin and Wallace; but I had a better argument. I insisted that Shakspeare had anticipated Darwin and Wallace. I urged that there was no passage in any pre-nineteenth century poet or philosopher which so completely and grandly comprehended the whole doctrine of evolution; associating with "great creating nature" the human skill which equally with things physical is the growth of evolution; and holding out to those who could draw inferences an infinite prospect of mental and spiritual change which will be progress, and progress by mental as well as physical evolution, as long as the world endures. I shall never forget the bright, beaming countenance with which Mr. Higgins made it up with Shakspeare and restored to his purse, as to a place of honour, the extract which had been confined there as in a coal-hole of disgrace.

I might mention, as another example of what I hold to have been the most distinctive characteristic of his mind—this strong generous antagonism, in the absence of any historic allowance, and with no toleration even for differing statement of the same truth—the fierce hostility which was excited in him by much of the theology of S. Paul, as popularly apprehended—and perhaps I need not in honesty make that qualification. In many discussions with our late friend, efforts were made by those who had a feeling of the necessities for which the evangelical system was a provision, to convince him that there were senses in which even S. Paul's most dogmatic and (so to speak) Calvinistic declarations and expansions of Christianity had correspondences with requirements of the spiritual nature. He gave in with candour. I know not whether he returned to, or indeed whether he ever departed from, his anti-Pauline standpoint.

If I do not seem too critical and even censorious in these rather searching remarks, I will continue them into one other theme. I mean his embracement late in life—quite late in life—of the theory which he called "altruistic worship." Notice has been taken of the fact that he never forsook the performance of the ritual of the Church. I am glad it was so. If men are to leave the Church the moment they are more enlightened than other members of it, the result will soon be that the Church will consist of all the dull and unread persons in the country, and of no one else; and as discovery after discovery is made, more and more even of the dull and the unread will get to disbelieve what the wise and cultured have left the Church rather than profess to hold, and will look back with regret at the unnecessary loss of men who at the time they seceded were not more heretic than they themselves have come to be.

Mr. Higgins, however, though he continued to do clerical duty, had little of Professor Jowett's and Dean Stanley's accommodating philosophy. Unquestionably, throughout a great part of his life he winced at the phraseology and dogma enjoyed by the people with a quivering pain which could only be felt by a man who held his opinions without any softening modification of historical and philosophical sympathy with the common mind. This probably never came to him. But there did come to him a sense of the necessity of getting rid of the distaste and revolt which had attended his self-denying ministrations. Try to imagine, with your knowledge of his kind and tremulous nature, the sort of pangs which he experienced Sunday after Sunday in conducting services for children and others for which he received nothing, and which only such a generous untiring self-sacrificer as he would have undertaken, and which had to consist of prayers and hymns the doctrines of which were horribly repugnant to him.

All through his life his work and thought had been for others. Altruism—not as a fanaticism or conundrum, but as a practical and spontaneous habit of life—irradiates his broad short sermons: what is better, it was constantly embodied in his conduct. At last he began to think it out to the full, and to follow it whither it should lead him. In one of his delightful discourses he brings Natural Theology out of music:

> I think there is a feeling of helpfulness, of helping and being helped, that has much to do with it. And I think this the more because when a great multitude of people, untrained, sing together, the music is not very perfect. Some are disposed to be flat, others the reverse, and some, it may be, are a little out of time. No matter, it all gets mixed up together into a grand volume of sound: and there is withal a fellow-feeling that is thoroughly healthy as well as grateful, and if any musical critic wants to know how powerful is this musical charity in covering a multitude of musical sins, let him go into a barn alone and chant the *Te Deum*. He will have no discords to offend his ear: no, nor any helpful feeling to warm his heart.

It was thus that altruism in religion began to work in him towards a positive system of deliberate concurrence for the sake of others in worship which in order to give them satisfaction, in fact, in order to be worship for them, must be couched in theological phraseology which the enlightened cannot accept. It is well worth your while to turn back to our lamented friend's address as President on "What is Religion?" the design of which was stated to be "to show that in the presence of the sceptical movement now in progress, it is not good to substitute Ethics for Theology—as advocated by the earlier Positivists and the author of 'The Service of Man'—but to accept, from the life and personal teachings of the Founder of Christianity, a faith in entire harmony with His Spirit, and with the newly acquired knowledge we possess of Nature." You may remember with what an apostolic fervour he propounded what he called the doctrine of the "Spirit of Alliance," by which he meant doing everything for others and with others, and then with what subtlety and boldness he advanced the theory of worshipping with others for others as a Christian duty irrespective of dogmatic concurrence.

How eagerly he welcomed any sort of adhesion to the view which had brought him a peace and comfort which he thought philosophical as well as Christian I well remember. To urge demurs would be to intrude on sacred ground. All I said to him in reply to his warm-hearted acceptance of my sympathy was that if we cultivated a liberal sense of Church History, and an appreciation of the human mind and of human beings' total Spiritual necessities we should find in almost every line of the common liturgy and hymnology of a great Christian Church quite as much for ourselves to express in devotion as to express for others, and that the least educated, in their most ordinary prayer and praise, will be worshipping quite as much—with certain interpretations—for us as for themselves.

My apology for saying so much about this is that nothing more fully or honouringly brings out alike the expansive beauties and the essential limitations of Mr. Higgins's character.

The nature which rejoiced weekly in Mr. Best's recitals and described Bidston Hill in a composition which should become a classic found its expression not only in the life of happy self-denial which we have described but in writings which have never received a tithe of the attention which is their due.

I shall best conclude with a few choice extracts in which the spirit of our dear friend is monumentally embalmed:

"We are saved by hope." The marvel is—our special capacity for being saved by hope. It is not what we possess but what we are striving for that exercises such potent influence over our lives and conduct. If our aim be worthy and upright there is not a good quality in our souls but it is new created and governed by the good hope.

It cannot be needful to explain what that is in the life and heart of man which corresponds with the replacement of the thorn and the briar by the evergreen fir tree and the sweet myrtle tree. Modern thought has certainly a wondrous range in the material universe. But no multiplication of worlds, so far as they are known to science, whether orbs or atoms, is so exalted a work as the purification of that intelligent spirit of man which transcends the observation of the senses. What are density and volume and velocity, compared with love and reason and truth? A molecule or a planet cannot be like God. But a clean heart and a right spirit can.

A stone has no sorrow, nor has a tree. If a bird has sorrow it is because it has known the joy of its nest and of its brood, and the song of its mate. The bough never knew the sorrow of bereavement, but oh! the blindness of declaring the bough happier therefore than the bird. Every sorrow tells of a lost joy, but not all joys are lost. So the joys of life must exceed the sorrows. Nor should sorrow be mistaken for melancholy, which is only a name for a mood inclining sickly minds to see cause for sorrow everywhere, and to taste only waters of Marah in the flowings from every fountain. For sorrow is honourably met with from without, in the vicissitudes of life, as the winds and the rollers beat upon the ship which the mariner, nevertheless, keeps on the course towards the haven where he would be. But melancholy disturbs the reckoning from within, prejudicing the senses so that they convey only wrong impressions. Wherefore let no false æsthetic gilding hide the inner corruption of "loathed" melancholy, never a child, never young, but sprung conspicuously and deeply draped from the brain of some would-be divinity.

A truer philosophy was never enshrined in choicer English diction. The muses of Literature and of Wisdom are indeed united in the achievements of our departed friend. He belonged to Life. Let us see to it that for us he shall always live. We may know his voice now and always in many of the best and most fruitful of our thoughts.

The following valued communication was received from the President of the Society too late to be incorporated in the paper :—

82 Philbeach Gardens, South Kensington, S.W.,
Oct. 29, 1893.

My dear Sir Edward,—I must write to express my sincere regret at my inability to attend to-morrow's meeting of the Literary and Philosophical Society. There is no other meeting in the session which it would have caused me the same disappointment to miss; but the claims that detain me elsewhere are peremptory, and I must lose the gratification of paying my tribute, and the far greater gratification of hearing your own, to the memory of the friend we have lost.

In thinking of his death, I feel that in some respects the most *interesting* figure of all, who have devoted themselves to the furtherance of our civil life, has been taken from us—the most gentle and picturesque, and worthy to be reverenced. But his thought of service was always so unassuming, so cheerful, so disinterested, that the worth and completeness of it almost escaped attention. To meet men free from personal and coarser forms of selfishness is not uncommon; but there are few indeed who for their cause, or their party, or their creed, can be quite fair and quite disinterested. Mr. Higgins was one of them. I do not think I ever knew anyone, who to so much devotion and enthusiasm added as sensitive and watchful an anxiety never to exaggerate a merit or overpress a claim of the interest, or the department, or even the argument, which he was championing. This added a peculiar and refining grace to a nature which even without it was singularly spontaneous, fresh, and loveable. And it kept him, even in old age, and amid infirmities of age, still young; for the secret of youth is in receptivity. No opening of new truth was so unfamiliar or so unlikely, that he would ever refuse it the courtesy of the single eye and the open mind. Perhaps, as he once wrote me, it might be a new coming of Jesus *out of* NAZARETH.

The teacher to whom he owned most frequent sense of obligation was James Hinton. From him, in whole or in part, he gained his guiding altruism, his conviction of a larger life in nature, his optimism founded in the faith that that essential life was love, his fearless universal charity of thought, his courage of desire 'to *love* life into dead souls.' To him nature was all of it, in every part, a live manifestation of love, however our organs of understanding may reflect into it shadows of their own deadness and imperfection. And he wondered and was often saddened that other men could not see it with his eyes. 'For myself' (he once wrote to me) 'I think that we are so far gone from the right apprehension of our relation to God, that I know not from what quarter to look for the message of recovery. I should fain have hoped from the sweet mono-linguistic teachings of Nature. Yet everyone opposes such a hope—Poets, Artists, Scientists, Philosophers, Divines! It must be that the fulness of time has not yet come.' So to the last he learned and hoped and laboured on, welcoming each new-found truth, prizing each opportunity of helpfulness, and finding in sure intuitions of affection and belief a stay against discouragements and fear.

Would that the memory of him could live on, and wake lasting echoes in the lives of his fellow-citizens!

Yours sincerely,
G. H. RENDALL.

A TRANSLATION OF THE SAGA OF FRITHIOF THE FEARLESS.

By Rev. JOHN SEPHTON, M.A.

The Saga begins with saying that King Beli ruled over the people of Sogn. He had three children, a son named Helgi, another named Halfdan, and a daughter named Ingibiorg, who was a beautiful woman, prudent of understanding, and the foremost of the royal children. West of the Sognfiord was a low-lying shore, whereon was situate a large homestead called Baldershay, including a fine temple surrounded by a tall wooden fence. This temple was a sanctuary, and contained many gods, of whom Balder was the most highly honoured; and so zealous were the heathen in their respect for the place, that no injury was allowed to be inflicted there, either on cattle or men, and purity of conduct was binding on both men and women within its precints. Syrstrand was the name of the district over which King Beli ruled; and on the other side of the frith there was a homestead called Framness, where lived a man named Thorstein Wickingson, whose house was right opposite the king's residence. Thorstein and his wife had a son named Frithiof, the tallest and strongest of men, who from his childhood excelled all other youths in manly exercises. He was called Frithiof the Fearless, and was much beloved, and enjoyed every one's good wishes.

When King Beli's wife died her children were but young, and a prosperous yeoman of Sogn, by name Hilding, begged that he might have the king's daughter as his foster-child. She was brought up under his care and devoted attention, and was known as Ingibiorg the Fair. Frithiof, likewise, was brought up by the yeoman Hilding, so that he and the king's daughter were foster-brother and sister, and they far surpassed other children in every excellence. When King Beli grew old his resources began rapidly to diminish. The third part of his kingdom was under the rule of Thorstein, and this portion was the source of his greatest strength. Every third year Thorstein made a great and costly feast to entertain the king; other two years the king entertained Thorstein. Beli's son, Helgi, soon distinguished himself by his attachment to the heathen worship, but neither he nor his brother Halfdan was popular.

Thorstein owned a ship called *Ellidi*, which carried fifteen oars on each side. It was strongly built like an ocean-sailing ship, having the prow and the stern curved and the sides adorned with iron. Frithiof was so strong, that when seated in the bow of the *Ellidi* he could row with two oars, each of which was thirteen ells long, while each of the other oars needed two men to ply it. Of all the young men of the time Frithiof was esteemed the pick, and was greatly envied by the king's sons because he was more highly praised than they. King Beli now fell ill, and when his sickness grew worse summoned his sons to his bedside, and thus spake to them:—"This illness will end in my death. One thing I entreat of you: stick close to my old friends, friends of long-standing. Without the aid of Thorstein and Frithiof, father and son, you will lack both strength and counsel. And raise a cairn over me when I die." After giving this charge Beli breathed his last. Then Thorstein fell ill, and calling Frithiof, said to him, "My son, one thing I entreat of you: let your will be subject to the king's sons, for such submission is due to their rank, though I feel that in any difference with them you will have right on your side. Place my cairn opposite that of King Beli, on this side of the frith, down by the sea; it will be easy for us to call out across the frith and tell one another the tidings." Shortly afterwards Thorstein died, and was buried in a cairn according to the directions he had given. Frithiof succeeded to his landed estates and personal property; his most valuable treasure was the ship *Ellidi*, and next to it a gold bracelet, not surpassed in value by any other in Norway. Two foster-brothers he had, Biorn and Asmund, both tall men and strong; of Biorn he had the highest opinion, Asmund waited on them both.

2. The fame of Frithiof now became more and more widely extended as he proved his courage in all kinds of dangers. His style of living, too, was grand, so that he was considered no less honourable than the king's sons, if their royal title be not reckoned. They were therefore cold towards him and hostile, being displeased that he was thought the greater man; they suspected, too, that their sister Ingibiorg and he had a great liking for each other. The time came when the kings paid a royal visit to Frithiof at Framness, and were entertained in the usual manner, Frithiof's hospitality surpassing all that was experienced elsewhere. Ingibiorg was present, and had a long conversation with Frithiof, in which she referred to the beauty of his gold bracelet. After their visit the kings returned home, and their envy of Frithiof increased more and more. Shortly afterwards a deep melancholy took possession of Frithiof, of which his foster-brother Biorn inquired the cause. "My affection urges me," he answered, "to ask Ingibiorg in marriage, and though my rank is not equal to that of her brothers, I am of no less importance than they." "By all means," said Biorn. Frithiof, therefore, taking some of his followers with him,

went to see the kings. He found the two brothers seated on a cairn, and after greeting them cheerfully, broached the subject of his wooing, and asked in marriage their sister Ingibiorg, Beli's daughter. To this they replied "To give our sister to a man without a title, as you request, is a most unwise proceeding, and we absolutely refuse to do so." "My business then," said Frithiof, "is soon over. Yet it will have one result. Hereafter I shall afford you no help whatever may be your need." "We don't in the least care about that," said they. Frithiof then went home, and all his cheerfulness returned.

3. There was a king whose name was Ring; he ruled over Ringarick, which is in Norway also. He was a great and noble king, and at the time of which we speak, well on in years. Speaking to his men, he said:—"I have been told that the sons of King Beli have broken off their friendship with Frithiof, most renowned of men. I will make them an offer by my messengers, either to submit and pay me tribute, or to encounter a hostile force which I shall lead against them. They will be an easy conquest, for they have neither force nor sagacity to resist me, and yet in my old age I shall win great glory by overcoming them." So the messengers of King Ring went forth, and having found the brothers Helgi and Halfdan in Sogn, thus spoke:—"King Ring sends you two a message commanding you to pay him tribute, or he will come and lay waste your realm." And they answered, "We will not learn in youth a lesson which we can't practice in old age, the disgraceful lesson of being subject to him. We must collect against him what force we can." This they did, and when their force seemed to them but small, they sent to Frithiof his foster-father Hilding, with a request that he would bring aid to them. When Hilding entered the hall at Framness, he found Frithiof seated, playing

at chess, and said to him:—"Our kings send their greeting to you, and desire your aid in battle against King Ring, who is invading their realm with tyranny and injustice." Frithiof answered never a word, but thus spake to Biorn, his opponent in the game:—"Mind the empty square, foster-brother! If you pay no heed to it I shall attack that red piece to see how it is protected." Then Hilding once more addressed him:—"King Helgi bade me tell you Frithiof, that you must join them on this expedition, otherwise they threaten you with harsh measures when they come back." And Biorn spoke:—"You have a choice of moves there, foster-brother; two ways of playing." "My first move will be an attack on the king," said Frithiof; "no doubt which of the two moves I shall choose." No other reply to his message did Hilding receive; he returned, therefore, to the kings in all haste, and told them of Frithiof's answers; and they asked him what interpretation he placed on them. "When he spoke of the open square," said Hilding, "his intention was to delay joining this expedition with you; and when he spoke of attacking the red piece, he alluded to Ingibiorg, your sister; therefore look you well after her. When I threatened him with harsh measures on your part, Biorn spoke of a choice of moves. And when Frithiof talked of a first attack on the king, he referred to King Ring." The two kings therefore made their preparations; but first they removed Ingibiorg, with eight attendants, to Baldershay, saying that Frithiof would not be so bold as to visit her at a spot where no man dares injure another. Then sailing south to Jadar they encountered King Ring in Soknar Sound. He was in a state of violent anger against the two brothers, because of their declaration that they felt it a great disgrace to fight against an old man, one who could not even mount his horse without help.

4. As soon as the kings were gone, Frithiof put on his robes of state, and fine gold bracelet, and, accompanied by his foster-brother, went down to the shore and launched *Ellidi.* "Where are you going now, foster-brother?" said Biorn. "To Baldershay," said Frithiof, "to enjoy ourselves with Ingibiorg." "The gods forbid that we should rouse their anger," answered Biorn. "We must run the risk," said Frithiof, "for I rate the favour of Ingibiorg higher than the wrath of Balder." Over the frith they rowed, nine in number; and, going up to Baldershay, entered the bower of Ingibiorg. She was seated with her eight maidens, and the bower was all hung with costly velvet and precious stuffs, As they entered, Ingibiorg rose up and said, "Why are you so bold, Frithiof, as to come here against my brothers' leave, rousing the gods to anger against you?" "Whatever be the result," said Frithiof, "I think more of your love than the gods' anger." "You shall be welcome here," said Ingibiorg, "and all your men likewise;" and then she made room for him at her side, and drank to him in the best of wine. As thus they sat and enjoyed themselves, Ingibiorg noticed the fine bracelet on his arm, and asked where he got the jewel. Frithiof replied that he had inherited it from his father. She praised it highly, and Frithiof said, "I will give it you, if you promise never to part with it, but to send it me back if you don't want it." Thereupon they plighted their troth to each other, and exchanged bracelets in sign of their pledges. Many evenings did Frithiof pass at Baldershay, crossing the frith to enjoy the society of Ingibiorg every day.

5. We must now speak of the kings and their encounter with King Ring. He had much the larger force; they therefore opened negotiations, and sought for peace, so that no battle might be fought. King Ring was

willing to grant peace, on condition that the Kings would submit to him, and give him in marriage their sister, the fair Ingibiorg, and dower her with a third of their property. To these terms they consented, seeing the overwhelming force against them. Peace was confirmed, and the marriage arranged to take place in Sogn, when King Ring should come for his affianced bride. The brothers now returned home, heavily displeased. When Frithiof was expecting their return, he spoke to the King's daughter and said, "Your entertainment has been hearty and hospitable, and the good man Balder has left us in peace. As soon as you hear of the kings' return, spread some light coloured sheets on the roof of the Dises' temple, the highest building in the enclosure, and we shall see them from our homestead." On which the king's daughter replied, "You have behaved as friends, and not as others would have done. As friends we shall certainly welcome you whenever you come again." Frithiof now returned home. The next morning, early, he went out of the house, and as he came in again, he recited :—

"Heroes, sharers of my joys, we go not to the beach,
No happy time awaits us, the sheets are laid to bleach."

And behold, when they went out, the Dises' temple was all covered with bleached linen. "The kings have returned home," said Biorn, "We shall have but a short spell of rest here ; I think we had better get our men together." His advice was followed, and a large force was collected to the spot. The two kings were soon informed of Frithiof's doings, and of the strength of his force. Whereupon King Helgi said, "It seems very strange to me that Balder must endure the shame that has been done to him. We will send to Frithiof, and see if he wishes to be reconciled with us or not; if not, we must outlaw him, for we have not the force now to fight against him."

Frithiof's foster-father, Hilding, carried the kings' message, and he was accompanied by friends of Frithiof. "The kings demand redress from you, Frithiof," he said, "and they bid you sail to the Orkneys and claim the tribute from the islands which has not been paid since the death of Beli. They require money, as they are about to give away their sister Ingibiorg in marriage, and a large dowry with her." "There is one bond only," answered Frithiof, "which binds us to peace with them, the respect we pay to our dead fathers. These two brothers will keep no faith with us. I must stipulate, however, that all our property remain uninjured in my absence." A promise to that effect was given him, confirmed by oath. Frithiof now made ready for his voyage, and chose his comrades, seventeen in number, for their valour and helpfulness. Before starting they asked if he would not first visit King Helgi, become reconciled to him, and deprecate the wrath of Balder. "I make a solemn vow," answered Frithiof, "that I will not ask peace of King Helgi;" and going on board the *Ellidi*, they sailed seawards along the frith of Sogn. As soon as Frithiof had gone, King Halfdan spoke to his brother Helgi, and said, "We shall rule more firmly if we make Frithiof pay for his misdeeds. Let us burn his homestead, and raise a storm about him, so that he and his men may come to no good." And Helgi agreed that his conduct deserved such recompense. They therefore burnt the homestead at Framness down to the ground, after robbing it of all it contained. They next sent for two witches, Heidi and Hamglom, and gave them money that they might raise such a fierce storm around Frithiof and his men that all would perish at sea. The witches performed their incantations, and seated on a lofty scaffold, chanted their spells and charms.

6. On reaching the mouth of the frith of Sogn, Frithiof encountered a great storm and fierce gale with waves mountain high; but the ship bore up splendidly, as she was a swift sailer, possessing fine seagoing qualities. And Frithiof recited a verse :—

"My well-tarred ship I launched at Sogn on distant sea to roam,
And left the ladies quaffing mead by Balder's sacred dome;
Though stormy winds arise, and our ship begins to fill,
May brightest sunshine never fail the maids that love us still."

"I think it would be well," said Biorn, "if you had something else to do than make verses on the maids at Baldershay." "I should not even then cease to sing of them," said Frithiof. The violence of the gale now drove the ship northwards into the straits near the Solund Islands. Then Frithiof recited :—

"The ocean swells, clouds fill the skies,
By witches' spells the billows rise;
No more I'll strive 'gainst forceful sea,
The Solund Isles will shelter me."

They drove the ship, therefore, under the lee of the Solund Isles, intending to abide there, but as the storm abated immediately, they changed their minds, and left the islands. Meeting now with a favourable wind, they began to look for a prosperous journey. Again the wind freshened, and Frithiof recited :—

"My oars at Framness Point I plied,
Fair Ingibiorg to see;
With swelling sail my ship now leaps
Deer-like, bounding free."

When the breeze had driven them well on in their course, the sea began once more to grow terribly rough, and a great gale burst over them, with a fierce snowstorm, so that the one end of the ship could not be seen from the other. And now she began to fill, and the pumps were kept at work unceasingly. Then Frithiof recited:—

"With darkness all around them, tossed on the raging wave,
Where, roused by witches' spells, enchanted tempests rave,
Eighteen brave men and bold, *Ellidi's* famous crew,
Toil hard to clear the ship, no Solund Isles in view."

Then Biorn said, "Whoever travels much must meet with hardships." "True, foster-brother," said Frithiof, and again recited a verse:—

"The surging waves rise high, by Helgi's royal power,
And times are not as when we kissed the maids in bower;
The king his sister ne'er will give, with me to mate,
Would that my fortune matched the maiden's high estate!"

"Mayhap," said Biorn, "she will think better of you in the future; your present work is well able to show what there is in a man." "'Tis indeed a time," answered Frithiof, "to test a good crew, but we should be more cheerful if we were in Baldershay." Then they encouraged one another to behave right manfully, for they were a doughty crew, all together, and the ship as tight as ever was seen in Northern lands. Then Frithiof recited:—

"With darkness all around, now Western Ocean's bed
Seems as 'twere all with glowing embers spread;
The billows raised on high, like lofty howe,
Bury beneath the waves *Ellidi's* prow."

As great seas dashed over her, and every man toiled at the pumps, Frithiof again recited:—

"The maid drinks oft to me, but she will sigh
When 'neath the boisterous waves I sink and die,
Yea, she will weep, East by the seabirds' home,
Where the linen lay to bleach on Balder's dome."

"Do you suppose," asked Biorn, "that the maids of Sogn will shed many tears for you?" "I think so, certainly," said Frithiof. Then the waves beat against the ship, and sheets on sheets of water fell into her; but the vessel was stout, and the crew were valiant, so that she withstood the violence of the storm. Then Biorn recited a verse:—

"'Tis true. The times are not as when a bride
Doth drink your health, and bid you to her side;
My eyes are steeped in brine, my eyelids smart,
My lusty arms e'en fail to do their part."

"Though your arms are tired," said Asmund, "we don't care; for you showed us no pity when our eyes were heavy, and you rose early in the morning to visit Baldershay in days gone by." "Why don't you recite something, Asmund?" asked Frithiof. "I will not keep silent, answered Asmund, and then recited this verse:—

"When the sea dashed o'er the ship,
Around the mast we stood,
And laboured hard, we eight,
In baling out the flood.
'Twas pleasanter to wait upon
The ladies in their bower,
Than thus to pump *Ellidi* clear
In such a billowy shower."

"You rate your work high, though not higher than it deserves;" said Frithiof with a laugh, "but you showed your thrallish bringing up when you spoke in your verse of waiting on the ladies at their meals." And now the storm increased afresh, while the foaming billows, white as drifted snow, which broke upon the ship on all sides, seemed to the crew more like huge peaks and crags than waves. Then Frithiof recited:—

"At Baldershay, by the maiden's side,
On a cushion I sat, my wit I tried;
But now I shall lie on Ocean's bed
And Ingibiorg another will wed."

"You express great apprehension, foster-brother," said Biorn, "in your words, yea fear, even; a sad thing in a brave fellow." "I feel neither despair nor apprehension," answered Frithiof, "though I sing of the voyages we made for pleasure; sometimes we speak of things oftener than we need; but most men would regard death as more likely to be their fate, than life, if they were in our position. But I will recite you another verse:—

When bracelets we exchanged in sign of love,
  Good luck was mine, but ill-luck now I reap.
To me, not you, did Ingibiorg's eight maids
  With longing look, while Balder was asleep."

"Be happy, foster-brother," said Biorn, "in the good fortune which befel you." At this point a great sea dashed over the ship, snapping both sheet and tack, crushing in the bulwarks, and washing overboard four men, who all perished. Then Frithiof recited:—

" A billow has snapped our sail-ropes twain,
  Four men have sunk in the fathomless main,"

"It seems to me," said Frithiof, "as if some of us are about to make a journey to Ran. We shall not be thought honourable messengers on our arrival, if we are not bravely furnished. Every man, I think, ought to have a piece of gold on him." Thereupon he took the bracelet which Ingibiorg had given him, and cutting it in pieces, divided it among his men, reciting at the same time a verse:—

" King Halfdan's red-gold bracelet
  We'll into pieces break;
Ere Father Eager, wealthy god,
  Our lives, by force, doth take.
Each guest who needs a lodging
  His gold may then display;
For Ran bids welcome to her halls
  Those who have gold to pay.'

Then Biorn said, "Our death is not to be looked upon as certain at this time, though it is not unlikely." The crew now noticed that the ship was making great progress in the water, but they knew not why; and there was darkness all around, so that they could not see from one end of her to the other, because of the driving spray from the hurricane, the bitter snowstorm and intense cold. Frithiof, therefore, climbed to the masthead, and when he came down said to his comrades, "I saw a most wonderful sight. There is a great whale lying in a ring all round the ship. I suspect we are near land, and the whale intends to hinder us from reaching it. King Helgi does not treat us in a friendly way, I think, for I see two women, no friendly messengers, on the whale's back, and to their vile witchcraft and spells we owe, doubtless, this hostile gale. However, we will try whether our luck or their witchcraft is the more powerful. You must steer straight at them and I will give these monsters a beating." Then he sang a verse.—

"Lo there in front are witches twain,
By Helgi sent across the main;
Ellidi's prow the two shall slay
As swift she glides upon her way."

I must tell you that the *Ellidi* was a charmed ship and understood human speech. Then Biorn said, as he went to take the rudder, "All men may now see how those royal brothers keep faith with us." Frithiof seized a fork, and going forward to the prow, recited a verse:—

"*Ellidi*, hail! The wave o'er leap
For witches ride upon the deep.
Crush teeth and brow, jawbone and feet;
To evil wight, such measure meet."

Then he threw the fork at one of the witches, while the prow of *Ellidi* struck the other and broke her back; the whale plunged into the sea and swam away, and the crew saw it no more. The storm began at once to abate, but the ship was damaged. Frithiof called out to the men, and bade them bale the water out, but Biorn said, "Such labour is useless." "Be on your guard against despair, foster-brother," said Frithiof, "brave men have ever been known to strive manfully while strength lasted, whatever the issue may be;" and he then recited a verse:—

"Be glad, brave men, right cheerful be,
And fear no longer death to see;
By happy dreams my hopes are fed,
Ingibiorg I yet shall wed."

They worked away, therefore, at the pumps; but as they came close to land they were faced by a gust of wind and rain. Then Frithiof took the two bow oars and plied them vigorously. As the storm cleared off they found themselves by Evie Sound, where they came to land. The crew were much exhausted, but Frithiof fearlessly carried eight men to shore through the tide, while Biorn carried two, and Asmund one. Then sang Frithiof:—

"Through driving storm and tide I bore
My breathless men to warmth on shore;
My ship to land I've brought at length,
Though hard is strife 'gainst ocean's strength."

7. Earl Angantyr was at Evie when Frithiof and his men reached land. It was his custom, whenever he sat drinking, to have a man seated by the louvre with his face to the wind, keeping watch from the banqueting hall. While at his post the watchman drank from a deer's horn, and when he had emptied one horn another was filled for him. As Frithiof approached land, the watchman, whose name was Hallward, recited a verse:—

"On *Ellidi* I see six men who bale,
And seven who row in the heavy gale;
The one at the bow bends over the oar,
Like Frithiof the Fearless, bold evermore."

And draining his horn, he flung it down through the louvre, saying to the woman who supplied him with drink:—

"Take up the empty horn, that rolls upon the floor,
Thou maid of graceful gait, and fill it up once more.
Men from my watch I see who now our aid demand,
Full wearied with the storm, or e'er they reach the land."

The Earl, hearing what Hallward recited, asked what tidings there were. "There are men come to our shores," said Hallward, "who are much exhausted. They seem fine fellows, and one of them is so stout that he is carrying the others to land." "Go and meet them," said the Earl, "and give them an honourable welcome, if they are Frithiof and his men. He is the son of my friend, the Baron Thorstein, and is famous for his manly accomplishments." There was a great Wicking present in the hall, by name Atli, who said, "I have been told that Frithiof made a solemn vow never to ask peace of any man. We'll put him to the test." Atli and his followers were ten in number, evil men and fierce, often seized with the wild fury of the bearsarks. Coming up to Frithiof, they made ready to fight, and Atli said, "You have got to meet us, Frithiof; eagles claw one another face to face, as the saying is; yea, we expect you to make good your words and not begin talking of peace." Frithiof turned towards them and recited a verse:—

"You island folk, of timid mould,
You'll cow not us, with language bold;
Your threatening ten alone I'll face,
Before I stoop to ask for grace."

At this moment Hallward came up and said, "The Earl wishes me to bid you all welcome; no one shall attempt to injure you." Frithiof replied that he would gladly accept the offered hospitality, both sides being honourable in their conduct. Thereupon they went to visit the Earl, who welcomed Frithiof and all his men most heartily. They remained there during the winter, highly esteemed by the Earl, who often asked about their voyage. Biorn made answer in a couplet:—

> " For nine full days, 'midst soaking spray we stood
> In cheerful spirits baling out the flood."

" King Helgi has well nigh laid you low," said the Earl. " Kings like him are badly disposed, being capable of no other conduct than to destroy men by means of witchcraft. I know what is your errand to me, Frithiof; you have been sent to collect tribute, and I have a short answer to your demand. King Helgi shall get no tribute from me. You, yourself, may have whatever money you wish, and may call it tribute if you like, or any other name that pleases you." Frithiof answered that he would accept the money.

8. I must now tell you what happened in Norway while Frithiof was absent. The royal brothers caused Frithiof's homestead to be burnt to the ground. The two sisters, Heidi and Hamglom, as they were engaged in their incantations, fell down from the scaffold on which they were seated and both of them broke their backs. During the autumn King Ring came north to Sogn to celebrate his marriage with Ingibiorg, and the wedding banquet was a magnificent one. As King Ring was conversing with Ingibiorg, he asked her, " Whence came that fine bracelet on your arm?" and she said that it had been her father's. " That bracelet," said he, " is the gift of Frithiof; take it off at once; you will have no lack of

gold when you come to Alfham." Ingibiorg therefore left the bracelet with Helgi's wife, begging her to restore it to Frithiof on his return. Then King Ring went away home with his wife and loved her dearly.

9. The following spring, Angantyr and Frithiof took leave of each other with much friendliness, and Frithiof sailed away from the Orkneys, accompanied by Hallward. As soon as he reached Norway he heard of the burning of his homestead, and coming in sight of Framness, he said, "My home has grown dark, and no friends were near to brighten it." And he recited a verse:—

"In days of old at Framness, in his noble hall,
We feasted with my father, fearless comrades all;
But now its blackened timbers aloud from me demand
Sharp vengeance on the princes for the work they've had in hand."

Then he asked his men what plan they would advise him to take, and they bade him be his own judge. He said therefore that he would first of all pay over the tribute which he had brought. They then rowed over the frith to Syrstrand, where they learnt that the Kings were at Baldershay engaged in a sacrificial banquet to the Dises. Frithiof and Biorn therefore went up to Baldershay, having first bidden Hallward and Asmund to break up, meanwhile, all the boats, large and small, in the neighbourhood; which they did. Coming to the doors at Baldershay, Frithiof prepared to enter, and Biorn begged him to be cautious, if he wished to go in by himself. Frithiof, bidding Biorn stay outside and keep watch, recited a verse:—

"Into the house I'll enter alone,
To meet the kings, help need I none;
If by late eve I don't return,
The Royal house you then must burn."

"Well said," answered Biorn. Frithiof then entered the Dises' hall. There were few persons inside; the kings were then offering sacrifice to the Dises and sitting at the feast. There was a fire on the floor of the hall by which sat the kings' wives and their attendants, warming the images of the Gods, anointing and wiping them dry with towels. Frithiof, going before King Helgi, said to him, "You would like to have your tribute now," and raising the purse that contained the silver he flung it into his face, breaking two of his teeth. Helgi sunk down in his high-seat fainting, and Halfdan seized hold of him to prevent his falling into the fire. Then Frithiof recited a verse:—

"With your front teeth
Your tribute take;
Unless O king! for more you ask;
In that skin pouch
Your silver find;
To gather it has been our task."

There were few persons in the fire-room, for a feast was going on elsewhere. As Frithiof walked back along the floor towards the entrance, he saw a beautiful bracelet on the arm of Helgi's wife, who was warming Balder at the fire. He seized it, but as it was firmly fixed on her arm, he dragged her with him along the floor, and Balder fell out of her hands into the fire; and when Halfdan's wife caught hold of Helgi's wife, the image which she was warming also fell into the fire. As the two images had been rubbed with ointment, they blazed up; the rafters next, and then the whole building caught fire. Frithiof however, got the bracelet; and when he came out Biorn enquired what had happened within. Frithiof held up the bracelet and recited a verse:—

"As Helgi on his high-seat sat, all ready for the blow,
I flung the purse into his face, and laid him, swooning, low;
Then Balder fell into the fire as my bracelet I did claim,
And speedily my bended feet did snatch me from the flame."

Some who tell the story say that Frithiof hurled a blazing brand among the rafters, which set the temple all on fire; reciting at the same time the couplet:—

"Let us haste to the strand, in great deeds to engage,
For throughout Baldershay the paly flames rage."

and this being done, they went down to the sea.

10. As soon as King Helgi recovered his senses, he ordered Frithiof to be pursued and slain, together with all his company. "He has forfeited his life" said he, "in that he has paid no respect to the sanctuary." The trumpet was then sounded, and when the body-guard assembled, lo! the temple was on fire; King Halfdan and some of the men busied themselves thereat, while King Helgi pursued after Frithiof, who was now on board his ship, waiting for events. King Helgi and his company found all their ships damaged, and had to return home again. Some of their men, however, were slain. King Helgi was so angry that he became furious; and bending his bow, placed an arrow in the string, intending to shoot Frithiof; but he pulled the string with so much force that both ends of the bow snapped. Frithiof, aware of Helgi's intention, grasped his two oars on the *Ellidi* and pulled so vigorously that they both broke. Then he recited a verse:—

"Young Ingibiorg in Baldershay I to kiss was fain;
And now, my oars, like Helgi's bow, are broken both in twain."

Then a wind sprung up blowing from the east along the frith; and they hoisted the sail. Frithiof now told his men that they must prepare for departure, as it was not possible to stay there any longer. They therefore sailed out to sea along the frith of Sogn; and Frithiof recited a verse:—

"When last we sailed from Sogn,
The fire blazed up on high
In our ancestral home.
But Baldershay now burns,
And an outlaw's lot will be
Henceforth my doom."

"What shall we do now?" asked Biorn of Frithiof and Frithiof answered, "I shall not stay in Norway; but make acquaintance with a warrior's life and go forth as a freebooter." Then in the summer they plundered the islands and outlying rocks, acquiring in this way wealth and renown; in the autumn they directed their course to the Orkneys, where they received a hearty welcome from Angantyr, and abode with him during the winter. As soon as Frithiof sailed from Norway the royal brothers summoned an Assembly, at which they made Frithiof an outlaw, depriving him of all his authority, and seizing his estates. King Halfdan settled in Framness, rebuilding the residence that had been burnt down. He and his brother restored likewise all the buildings at Baldershay, though a long time elapsed before the fire was put out. What chiefly affected Helgi was the total destruction of the images of the Gods; and very heavy was the expense before Baldershay was completely restored to its former estate. King Helgi now abode in Syrstrand.

11. Frithiof amassed much wealth and gained high esteem; wherever he went he slew evildoers and savage wickings, but yeomen and merchants he left in peace. The surname of Fearless was attached afresh to his name, the number of his followers, strong and able for war, greatly increased, so that he became very rich in moveable

property. When he had passed three years as a wicking, he sailed from the east and directed his ships to the Wick; here he anchored, and said he would go on shore. "You," said he, to his men, "will pass the winter gathering plunder. I have begun to tire of the work, and will go to the Uplands and speak with King Ring; after the winter, come again to me here, where I shall arrive on the first day of summer." "Your plan is not a wise one," said Biorn, "but you will have your own way. I should like us to sail north to Sogn, and slay the two kings Halfdan and Helgi." "There is no advantage in that course," answered Frithiof, "I prefer to visit King Ring and Ingibiorg." "I am not willing," said Biorn, "that you should venture yourself alone in his power, for Ring is high-born and sagacious, though somewhat advanced in years." Frithiof declared that he would persist in his plan; "You, Biorn," said he, "shall be captain of our force, meanwhile;" and his will prevailed. In the autumn Frithiof made a journey to the Uplands, for he was curious to see what affection subsisted between King Ring and Ingibiorg. Before arriving there, he put on a long shaggy outer cloak, hid his face in a hood, and walked with a staff in each hand, making himself appear as old as he could. Meeting with herdsmen he walked in humble manner, and asked whence they came. "Our home," they answered, "is at Streituland, the king's residence." "Is Ring a great king?" asked the old man, "we should think you quite old enough," they said, "to know in what light is held all that King Ring does." The old man made answer that he had given more thought to salt-burning than to kings' lives. He then proceeded to the royal abode, and at close of day he entered the hall, looking very infirm; and he took a place near the door, wearing the cowl of his cloak so as to hide his features.

King Ring then remarked to Ingibiorg, "A man has come here into the hall, much taller than others." "That is but trifling news," answered the queen. The king then spoke to the boy who stood near the table serving, "Go and enquire who is that man with the cowl, whence he comes, and of what kin he is." The boy hastened across the hall to the door, and said to the new comer: "what is your name, man; where were you last night; and who are your kindred?" "Your questions come thick, boy," answered the man, "Can you keep the answers distinct if I tell you?" When the boy said he was well able, the cowl-man answered: "My name is Thiof, I stayed at Ulf's last night, and was brought up at Angr." This answer the boy reported quickly to the king, who said, "You give your message clearly, boy; I know that district, Angr; possibly the man has more to say, and is sagacious; I like the look of him." "That is a strange habit of yours," said the queen, "to be so eager and desirous of talking with every old fellow that comes here; what is there in him you like?" "You don't see," said the king, "as clearly as I do. He is one who thinks more than he says, and looks well round about him." Thereupon the king sent for the cowl-man, who came forward and stood bent before him, greeting him in a low voice. "What is your name my tall fellow," asked the king, and the cowl-man in answer recited a verse:—

"When I a roving plunderer became,
    Then Frithiof, that is Peace-Thiof, was my name;
'Twas War-Thiof when from women tears I wrung,
    And Spear-Thiof when the javelins hard I flung;
'Twas Fight-Thiof when I serried ranks attacked,
    And Isle-Thiof when the distant isles I sacked;
'Twas Hell-Thiof when the little ones I speared,
    As Slay-Thiof, foeman's queller was I feared;
'Mong lowly saltmen have I dwelt of late,
    Till needy grown I now your help await."

"Your name of Thiof has had many different additions at different times," said the king, "but where did you stay last night, and where is your home?" "I was brought up," answered the cowl-man, "at Angr. A strong desire led me here, and home have I none." "It may be true,' said the king, "that you have lived at Angr for a time, and it may even be true that you were brought up in the midst of peace; but last night you could only have passed in the forest, for there is no yeoman hereabouts named Ulf. When you say that you have no home, you mean, perhaps, that you think little of home, being urged by a strong desire to come here." Then Ingibiorg spoke and said: "Go away, Thiof, to some other quarters, or else into the retainers' hall." But the king said: "I am old enough to look after my own guests here; take your cloak off, guest, and sit down beside me." "You must be in your dotage now," said the queen, "seating vagrants by your side." And Thiof said: "Such a seat befits me not, sire, the queen is right; I am more used to salt-burners than to sit with chiefs." "Do as I bid you," said the king, "I will have my own way this time." Thiof therefore laid aside his cloak. He now appeared in a dark blue tunic, and wore a fine bracelet. Round his waist he carried a thick belt of silver, from which hung a heavy purse of bright silver coins. He was girt with a sword, and had a large skin bonnet on his head, for he was very weak-sighted. His face was all covered with hair. "I call that a better show," remarked the king; and turning to the queen, he said: "You must present him with a good mantle, O queen, and he will look well." "You will have your own way, sire," answered the queen, "but I have no good opinion of this man Thiof." A good mantle was then laid over his shoulders, and he sat down in the high seat next the king. The queen turned crimson when she saw the fine bracelet that Thiof wore, but for all that would not exchange a word with him; the king, however, was very cheerful, and said: "That is a fine bracelet on your arm, it must have cost a good deal of salt-burning." "It was all the inheritance that my father left me," said Thiof. "May be," said the king, "but you are worth much more than he was, and there are few salt-burning fellows your equals, unless old age is dimming my vision o'er rapidly." Thiof remained there throughout the winter in high favour, all thought well of him; he was generous with his money, and cheerful towards every one. The queen had very little talk with him, but the king's manner was always pleasant.

12. We are told that once upon a time King Ring started on a royal progress, accompanied by the queen, and a large body of retainers. He asked Thiof whether he would join the company or stay at home; and when he answered that he preferred to go, the king was pleased. They proceeded, therefore, on their journey, in which they had to cross over a frozen lake. Here Thiof said to the king, "The ice has a treacherous look, I don't think we have been cautious." "We often find," said the king, "that you are careful and anxious about us." Shortly afterwards the ice broke just underneath them, and Thiof, rushing up, pulled back the carriage and all in it, king and queen both, and with the carriage the horse yoked to it. "Well lifted, Thiof," said the king, "Frithiof the Fearless could not have shown greater strength if he had been here; 'tis a deed worthy of the boldest of attendants." They arrived at the banquet prepared for them, where no incident of note occurred, and the king returned home again, taking with him splendid gifts. Midwinter passed away, and with the return of spring the weather

improved; trees put forth their leaves, plants sprung up into life, and ships glided over sea from land to land.

13. One day the king said to his body-guard, "I should like you to go this day into the forest for amusement, and to see the beauty of the country." As the king willed, so they did, and a great company attended him to the forest. Here it chanced that the king and Frithiof, both together, got separated from the others, and the king said he felt heavy and inclined to sleep. "You had better go home, sire," said Thiof; "that is more seemly in a man of rank than to lie out in the forest." But the king said he could not, and lying down slept heavily and noisily. Thiof sat by him, and drawing his sword from the scabbard flung it away to a distance. A while afterwards the king sat up and said, "Many thoughts flitted through your mind, Frithiof; am I not right? But you came well out of temptation, and we esteem you highly for it. The first evening you entered our hall I knew you, you shall not soon part from us, I have an important charge to lay upon you." Frithiof answered, "You have treated me, sire, in a friendly and hospitable manner, and I must soon leave you, for my men will not be long in coming as I appointed them." As they rode away out of the forest the king's body-guard joined them. Having come home to the hall they ate and drank heartily, and the tidings were then made known to the whole company that Frithiof the Fearless had passed the winter among them.

14. Early one morning a great knocking was heard at the door of the hall in which slept the king and queen, with many other persons. When the king enquired who called there, the answer came, "'Tis Frithiof. I am now ready to go away." The hall door was then opened and Frithiof entered reciting a verse:—

"The hero now is quite prepared another home to find,
And grateful thanks he gives to you who have been wondrous kind;
I'll aye remember Ingibiorg while the light of day we see,
And jewel give, for many a kiss; oh may she happy be."

With these words he threw his fine bracelet to Ingibiorg, and begged her to accept it. The king smiled on hearing his verse, and said, "You have given her better thanks for your entertainment during the winter than you have given me, and yet she was not more friendly towards you than I." He then bade his serving men fetch meat and drink, saying that they must take a meal together before Frithiof's departure; and to the queen he said, "Sit up, my queen, and be cheerful," but she answered that she had no wish to take food so early in the day. "We must all take our meal together," said the king; and so they did. When they had been eating for a time, King Ring said, "I should like you to remain here, Frithiof, my sons are but children, and I am old and unfitted to defend the country if any freebooter should seek to plunder my realm." "I must go away soon, sire," answered Frithiof, and recited a verse:—

"A happy life and long
Be thy lot, O Ring,
For under heaven's roof
There is no nobler king.
Guard well thy wife and land,
O Prince of men,
For Ingibiorg and I
Never meet again."

Then King Ring recited in answer:—

"O Frithiof! beloved,
Be thou not seen
Thus hence to go away,
With downcast mien;
For these thy ornaments
I would thee repay,
With gifts surpassing far
Thy fullest hopes to-day."

He added also :—

"I give to fearless Frithiof
My wife and all that's mine;"

Which couplet Frithiof thus completed :—

"Such gifts I may not hold
O king, while life is thine."

"I should not make this bequest to you," said the king, "if I did not believe and were convinced that sickness is fallen upon me; and I grant to you the enjoyment of my gift because you excel all other men in Norway. I must also bestow on you the name of King, for Ingibiorg's brothers are less inclined than I to esteem you and give their sister to you to wife." To these words Frithiof answered, "Accept, sire, my hearty thanks for your kindness, which is even beyond my wishes; I desire no title beyond that of earl." King Ring then confirmed to Frithiof, by the ceremony of striking hands, the government of his realm, and gave him therewith the title of Earl. Frithiof's rule was appointed to last until King Ring's sons were of an age themselves to govern the country. The king's illness lasted but a short time, and when he died there was great grief over the whole realm; and a cairn was raised over him, in which was laid, according to his dying wishes, much wealth. Frithiof then held a funeral feast worthy of the king, to which he invited all his own men; and it was followed by a wedding feast in honour of his marriage with Ingibiorg. He then established himself in his government, and was regarded as a very great man. Ingibiorg and he had many children.

15. The two kings in Sogn, brothers of Ingibiorg, now heard all the tidings; how that Frithiof had gained the sovereign power in Ringarick, and how he had married their sister Ingibiorg. "What a monstrous and shameless

thing," said Helgi to his brother Halfdan, "that a baron's son should have Ingibiorg in marriage." They collected therefore a large force and proceeded with it to Ringarick, purposing to slay Frithiof and reduce his realm into subjection. When Frithiof heard of their purpose he gathered a force together, and said to the Queen: "War has come close to our realm; whatever be the end of it I should not wish it to make you cold towards me;" to which she answered: "In the present crisis, I shall be content to see you superior to my brothers." To help Frithiof, Biorn came with a force from the east. A battle was fought, and as on former occasions, Frithiof was to the front wherever there was danger. He had an encounter with Helgi and struck him a death blow. Thereupon he ordered the white shield, the shield of peace, to be held up on high; and when the fighting ceased, he said to King Halfdan: "You have two grave courses before you. Either place yourself unreservedly in my power, or submit to death as your brother has done. You see that my cause is stronger than yours." Halfdan chose the former course, and put himself and his realm under Frithiof, who thenceforth exercised sovereign power over Sogn. It was agreed between them that Halfdan should be Baron in Sogn and pay tribute to Frithiof as long as the latter held Ringarick. When he delivered up Ringarick to the sons of King Ring, Frithiof accepted the title of king over Sogn, and afterwards subdued Hordaland. His two sons by Ingibiorg were, Gunnthiof and Hunthiof, who were distinguished for their personal qualities. And here ends the Saga of Frithiof the Fearless.

[This early form of Frithiof's Saga dates from the fourteenth century. It is known to English readers through the translation given in Morris and Magnusson's *Three Northern Love Stories;* and has been translated into Latin, German, Swedish and Danish, in which latter language it appears also as a Play. Its incidents form the basis of Fridthjof's Saga, a poem in the Swedish language by Bishop Tegner, which appeared in 1825, and has become "a welcome addition to the translated poetry of every literature in Europe." There are at least five translations of Tegner's poem into English.]

THE MUSHROOM BEDS OF THE SOUTH AMERICAN ANTS.

By R. J. HARVEY GIBSON, M.A., F.L.S., F.R.S.E.,
PROFESSOR OF BOTANY, UNIVERSITY COLLEGE, LIVERPOOL.

[ABSTRACT.]

In no group of the Vegetable Kingdom have greater advances been made during the past decade than in that to which our common moulds, rusts, and mushrooms belong, viz., Fungi. Not only have new species and genera been added to those already known, but life-histories previously but imperfectly, if at all, worked out, are now taught in our class-rooms. Structural features at one time considered of supreme importance have come to be considered as of secondary value only, and the whole taxonomy of the group has in consequence undergone complete revision. Chief amongst the more recent investigators in this line of botanical research must rank Professor Oscar Brefeld, of Münster, whose colossal monographs (*Botanische Untersuchungen über Schimmelpilze*) have filled his fellow botanists with admiration, and all students of Fungi with something akin to fear. Fortunately for those whose own particular interest centres in other groups of the vegetable world, and who must of necessity therefore look with jealous eye on the time spent on the study of only very distantly related families, there has come forward a zealous and able pupil of the great master in the person of Dr. Von Tavel, of Zurich, who has in an admirable manner condensed and exemplified in a moderately sized treatise (*Vergleichende Morphologie der*

Pilze) the chief results that Brefeld has reached during his long and thorough study of Fungi.

Few botanists have had the good fortune to produce so many and so enthusiastic disciples as Brefeld, disciples who have in their published works so thoroughly established the claim of the Münster School to rank side by side with the older, though probably not more famous, schools of Strassburg, Würzburg, and Leipzig. The present paper aims at nothing more than briefly summarising one of the many investigations undertaken at Professor Brefeld's suggestion, and by one of his pupils, Dr. Alfred Möller. The research has been published in the well-known *Botanischen Mittheilungen aus den Tropen*, edited by Prof. Schimper, of Bonn, and is entitled "Die Pilzgärten einiger sud-amerikanischer Ameisen." A brief review of the work from the pen of Mr. J. C. Willis, M.A., now Demonstrator of Botany in the University of Glasgow, and once a student of University College, Liverpool, appeared in *Nature* in the autumn of last year,

Attention was first pointedly drawn to the curious habits of the leaf-cutting ants of Brazil by Bates in his *Naturalist on the Amazons*. Writing from Pará, Bates speaks of the destruction caused by these enemies of the would-be tropical gardener, and remarks that agriculture is rendered wellnigh impossible by them in some parts of the country. As to the use the ants made of the leaf fragments, Bates offers no theory beyond suggesting that they lined their nests with them, as do our own leaf-cutting Bees. The true explanation was first suggested, though not thoroughly established, by Belt, who, in his *Naturalist in Nicaragua*, gives many interesting observations on the habits of the ants, and supplies Möller with the text of his monograph, "I believe that they are in reality mushroom growers and eaters." For his researches had led Belt to believe that the vegetable growth constantly present in the ants' nests was a special cultivation of their own which they used as food, and which they assiduously tended and carried from place to place with them in their migrations.

Möller's earnest desire to visit that paradise of the botanist—the tropics—seems to have been encouraged by his teacher, Brefeld, and rendered financially easy of fulfilment by the generosity of the Royal Academy of Berlin. At Blumenau Möller fell in with his uncle, Dr. Fritz Müller (the well-known investigator on the fascinating subject of insects in their relation to the pollination of flowers), with whose aid and under whose direction the young botanist soon found himself able to initiate the observations and experiments which have led to the complete elucidation of the habits of the leaf-cutting ants.

The questions Möller set himself to answer were, Was the vegetable growth in the ants' nests a fungus, as it appeared to be? Did the same fungus occur in each nest, and what kind of a fungus was it? What happened to the leaf fragments after they were taken into the nest? Would the ants live in captivity, and, if so, would they then unfold the secrets of their underground dwellings? Did they ever eat the leaves they cut? If not, what did they do with them? Was it the fungus that grew on the leaves that they used as food? How did the fungus get there, and how did they cultivate it? What was the natural life-history of the fungus, and what was its taxonomical position?

The commonest leaf-cutting ants at Blumenau, where the investigation was carried out, are species belonging to the genus *Atta,* although other forms belonging to the genera, *Apterostigma* and *Cyphomyrmex,* appear to have similar gardening propensities. Möller began his researches by making prolonged and careful observations on the habits of the ants in a state of nature. He carefully describes the covered highways leading from the ants' nests to the plantations where the leafy harvest was being gathered, and gives minute details as to the engineering triumphs of their tunnels. The time taken to travel from the wood to the nest, and the weight of the load carried by each ant are noted. In one case the distance of 26 metres from the tree to the nest was travelled in 1 hour 10 minutes; the load carried being twice the weight of the carrier. Although at first sight not a phenomenal rate of progress, still seeing that the ant-workers are about 6 mm. long, and reducing the data to the terms of human height and labour, the work done by the ant in question would be equivalent to that performed by a man, say 6 feet high and weighing 12 stone, carrying over 300lbs. at the rate of over 5 miles an hour.

Möller confirms Belt's observations as to there being three types of workers; the smallest kind stay at home for a purpose afterwards to be explained, but, though they carry no loads, frequently come out for a walk, riding home on the backs of the median-sized workers, who do carry the leaf-fragments. The largest sized workers also carry no loads, and appear to be merely of general utility, removing obstacles from the highway, directing operations, and protecting the real porters.

The structure of the jaws of the leaf cutters, and their *modus operandi* in cutting the leaf itself, are next described in detail, and many experiments are given illustrative of the ingenuity of the ants in overcoming difficulties put in their way.

The nests are underground, and consist of cavities connected by tunnels, almost filled with a spongy mass of brownish flocculent material, through which the ants travel in all directions, tending the eggs and larvæ. The flocculent mass was termed by Belt, "Ant-food"; by Möller, "the Fungus Garden." On detailed examination the garden is found to be composed of small rounded particles, dark green in colour when fresh, becoming blue-black, and finally yellowish-red, and permeated in all directions by fungus hyphæ. On all save the youngest parts are found clumps of swollen club-shaped hyphæ, named by Möller "Kohlrabihäufchen." Each clump measured on an average ·25 mm. in diameter, and the individual swellings 10–24 μ. Each consisted of a cell wall, enclosing richly vacuolated protoplasm. The main mass of the clump consisted of exceedingly finely divided leaf particles.

Observations were then made on the use of the "fungus garden" to the ants. If the nest were opened, the ants hastened to gather the younger parts of the garden, and to cover them up at once, neglecting even the larvæ in their anxiety to save the fungus from the injurious effects of light. When the ants were kept under a bell-jar, and supplied with fresh leaves, they made no use of them, and soon died. When provided with a portion of a garden, they for a time attempted to rebuild it, but as it gradually shrunk and withered they gave up the task in despair. When "Kohlrabihäufchen" were presented to ants purposely kept on short commons for a day or two, they greedily devoured the succulent balls. Finally, when a number of ants were provided with a garden, a damp sandy floor, and fresh leaves, they built a new nest, and apparently succeeded in making ends meet, even in captivity. By an ingenious arrangement of blackened glass shades and shutters, Möller was enabled to study the life of the ants more minutely, and he found that in darkness the ants built no roof to the garden. He was able accurately to watch all the features of their domestic arrangements. He found that each ant carried into the nest its own particular scrap of leaf, then proceeded to snip it into small pieces, and to chew these particles thoroughly, and with the aid of its feet to roll the pulp into a ball. The balls were then transferred to the garden by the smaller workers. Over and through these balls the fungal hyphæ rapidly grew. The smallest workers also acted as gardeners, weeding and tilling so well that even bacteria were found to be absent from the culture.

Of course, the hyphæ and "Kohlrabi" alone were no guide to the exact nature of the fungus, so Möller next set to cultivate it artificially. Presently there arose from the mycelium erect aerial hyphæ, bearing conidia, the "Kohlrabi" being used up in the development of these. Möller describes and figures several types of conidia, each with different functions, and appearing under different conditions. The fungus was thus proved to be either an Ascomycete or a Basidiomycete. After many vain attempts to cultivate the highest type of fructification, Möller was so fortunate as to discover on an old nest a mushroom-like body growing from the mycelium in the nest, which at once enabled him to judge that the fungus was a member of the Basidiomycetes. This conclusion was confirmed by the germination of the basidiospores into hyphæ bearing "Kohlrabi," identical with those found in the ants' nests. To the fungus Möller gave the name of *Rozites gongylophora*.

Very many different genera of plants appear to be employed by the ants as sources whence they derive the leaf fragments. Of these the most common appear to be species of *Caladium, Colocasia, Poinsettia, Cecropia, Ficus, Böhmeria, Manihot, Cuphæa, Pteris*, etc.

The paper is illustrated by several photographs of the nests and "fungus gardens," and by plates illustrating the detailed anatomy and life-history of the fungus itself.

That in many cases, and in many parts of the world, ants are frequently found in close association with flowering plants, has been known to botanists for some time. So long ago as 1688, the great English botanist, Ray, observed that ants lived in the hollow stems of the South American *Cecropia palmeta,* and Belt, Delpino, Schimper, Huth, McCook, and others have successively discussed the problems such curious relations of animal and plant presented for solution; but this still more recent contribution to Bionomics may justly rank as by no means the least wonderful and interesting of the many *miracula naturæ* which are in these later days unfolding themselves to the curious gaze of the biologist in his search through the pages of "Nature's infinite book of secrecy."

RECENT SOCIALISTIC AND LABOUR LEGISLATION IN NEW ZEALAND.

By J. MURRAY MOORE, M.D., EDIN.;
F.R.G.S., F.R.C.I.

THE historian of Greater Britain, when writing of its social and political developments in the latter half of this century, will devote considerable space to those movements which began in the colonies, and gradually extended back to the old country. Of all the free, self-governing young countries of our empire, New Zealand has, by its recent legislation, afforded to the political and social reformers, the most remarkable and instructive studies. It is because I have been for fourteen years past intimately associated with this colony, at first by residence (1879 to 1888)), and since my return home by correspondence, frequent visits from New Zealand friends, and a continuous supply of Colonial newspapers, pamphlets, and government publications; and because the " State Socialism " of certain recent enactments of the New Zealand Parliament is being much discussed by thoughtful Englishmen, that I have chosen this subject when asked by the Council to read a Paper during this session. I must here acknowledge the kind help of my friend, Sir Westby Perceval, the first New Zealander who has filled the honourable office of Agent-General for the Colony, in sending me official documents of latest date, and of my neighbour, Mr. J. C. Sutherland, of Taranaki, who has given me the last New Zealand newspapers. Throughout this paper the term "New Zealander" will be used for those born in the colony, of European parentage, whereas "native" will apply only to the aboriginal Maoris, and to the half-castes.

The progress in Democratic ideas of our Anglo-Saxon-Celtic race is now-a-days so rapid, and the *solidarity* of its widely-spread branches is becoming so universally recognised, that the most startling political and social opinions prevailing in the colonies to-day may become our own at home in less than a decade. With us, in the Old Country, as our late Laureate puts it,

> " Freedom broadens slowly down
> From precedent to precedent."

but in ever-moving, restless, energetic New Zealand,

> " Freedom rushes swiftly on
> From theory to experiment."

Hitherto the laws of New Zealand have been framed on British models, and have nearly all comported with English statutes. In framing new laws specially adapted to Colonial conditions of life, we should naturally expect some amount of Conservative caution from a community in which the Scotch outnumber the Irish, and both together are numerically less than the English. But there are outside influences which have powerfully affected New Zealand of late years, and modified its independent legislation. I assume that my audience are already well-informed about New Zealand, and the perfect freedom of its internal adminstration, either from a perusal of my own book, *New Zealand for the Emigrant, Invalid, and Tourist,* which is recognised as a standard work by the New Zealand Government, or of some of the many accounts published of this favourite colony.

The nearest neighbour of New Zealand is Australia, and, accordingly, the Australian type is impressed upon both the ideas, recreation and political methods of New Zealanders. But, only twenty days' steaming from her northernmost port (Auckland) lies that vast Republic, Anglo-Saxon in its origin, and the most successful of modern republican governments, which has exercised, and is exercising a potent influence on New Zealand thought. New Zealand is six weeks' journey from London (except one hurries across America with the mails) and only nineteen to twenty days from the United States. It thus happens to be that portion of the British Empire, south of the Equator, where British, Australian and American ideas, notions, principles, and practices meet and commingle. On their way to Sydney or Melbourne, Americans, in increasing numbers every year, take a run through New Zealand, and find much to admire, much that is worthy to rank with their own Yo-Semite and Yellowstone Park. The Colonists are the brightest and best-educated of the Australian group, and are as earnest seekers after novelty as the Athenians of old. Eminent lecturers from any country receive a cordial welcome from crowded audiences. Thus Henry George and Major Dane have impressed Socialist and Democratic ideas upon the New Zealand mind. Indeed, had it not been for the cooler heads having been in the majority, the Socialistic and Labour Laws, on which I shall comment to-night, would have been forced on so roughly by the proletariat as to have created a commotion little short of a revolution. But it is not always the "froth that rises to the surface" in this colony, and the wise "statesmen of rare ability who have at every stage of New Zealand's history arisen to meet her wants," as Sir Julius Vogel remarks, have declined to disturb the existing rights of property and vested interests (that much abused phrase) *until* it was expressly so ordered by the votes of the people at a general election.

Useful laws from the United States they are always ready to import: witness the recent institution of "Arbor Day," an annual public holiday given to the schools, public offices, &c., for the express purpose of planting trees to counteract the rapid denudation of the forests of the colony, and the consequent diminution of the rainfall in certain districts. This "Arbor Day," first instituted by the State of Nebraska in 1874, will prove as great a boon to New Zealand as it has been in the twenty States of the Union which have adopted it. But the same approval I can scarcely give to the other American adaptations: the popular election of mayors of boroughs; the heavy protective tariff, and the heavy poll-tax on "John Chinaman." The New Zealander, however, defends the first innovation on the ground of an enlarged scope of choice for the chief magistrate, the second as absolutely necessary for revenue; and the third as the only protection the colonial workman has against the "Yellow Plague.' New Zealand is perhaps a little too indulgent to the theorist and faddist. Not only does every new "prophet" get a fair hearing for his message, but men of peculiar, and even eccentric opinions rise to positions of power and profit. Every new idea, be it fad, theory, or solid well-thought-out truth, is sifted on the platform, in the press, and it may be in the pulpit also. If the triple verdict of these three censors is adverse, the novel idea sinks out of sight, and has no second chance; but if favourable, it is incorporated in some Act of Parliament, or in some Society. I well remember three "fads" that were ventilated in my time, but given up finally as impracticable. These were the Zone System of uniform Railway Fares, as in Hungary, ably and persistently pressed into notice by Mr. Samuel Vaile. The Government at last tried it on a short line of railway, north of Auckland, but it resulted in a decided loss to the State. Next came Sir Harry Atkinson's pet theory of the Hare System of Proportionate Representation, introduced by him into his Electoral Bill of 1888, which caused the rejection of that measure. Lastly, the Single-Tax on Land of Henry George, which is to supplant every other tax, and "abolish poverty," is now viewed as a fad by nearly everyone, although, as I shall show, the *germ of it,* namely, a *Land-Tax levied on the land itself,* forms a part of the New Direct Taxation.

On the other hand, Great Britain has even condescended to imitate New Zealand laws.

The First Offenders' Probation Act became law in the colony in 1886, and was so successful in saving young persons and first offenders from a criminal career that, in 1891, a similar Act was passed through our Parliament, and is now on the Statute Book. Upon the New Zealand Government Department of Labour and its excellent monthly journal, Mr. Mundella has modelled the Labour Bureau and *Labour Gazette,* which have been lately heartily eulogised by our new Premier, Lord Rosebery.

Having lived and worked in both the old and new countries (and also in the United States) I am certain that the masses of Old England would be benefited by at least three New Zealand innovations—to the serious dislocation, however, of vested interests. These are (1) The substitution of the Public Trust Office for our cumbrous and costly Court of Chancery; (2) The permission to a duly-qualified lawyer to practice both branches of his profession; (3) An inquest or enquiry by the coroner or some other official into every fire that occurs.

It is not easy to give an English audience an exact idea of New Zealand politics. To an outsider they seem more parochial than patriotic. There are no Tories in the colony—unless perhaps R. H. Bakewell is one, a writer who utters his Jeremiads and Cassandra-like prophecies of woe in the otherwise instructive pages of the *Nineteenth Century*, and to whom I mean to reply some day, by the kind permission of the editor—but all are Radicals of various shades. In fact there are two chief parties at every turn of the political kaleidoscope—and I have seen six ministries form, govern, and melt away within as many years—the "ins" and the "outs," and a subordinate party of those who, as Americans say, "sit on the fence." There is no squatter aristocracy as in Australia, but a disproportionate number of traders, agents, brokers, lawyers, and government employés in a relatively oversized civil service. Thus I might divide the Colonists, socially, into employers and employed. It is the boast of New Zealand that the poorest boy may rise from the primary school up to the university, without expense, by a series of scholarships; and that if his abilities are of the right kind he may rise to the highest post of honour in the country, short of the Governorship. Each New Zealand boy or girl knows of whom the government consists; what important measures are passed; who are the popular and unpopular men of the day; and, in fact, is better informed than our own children of similar age on these matters, and more ambitious to possess a vote. In New Zealand the State owns a great area of land; all the railways, telegraphs, telephones, post-office arrangements, school buildings, miners' water-races, and harbour works; besides doing a very large savings-bank, insurance, and public trustee business; and thus has prepared the colony for advancing into State Socialism. The last four Premiers have been more or less advanced Radicals, and believers in that moderate "State Socialism," which is defined as "the gradual assumption by the State and Municipalities of all the institutions which minister to the every-day wants of the people." Henry George's dictum—"A civilisation which tends to concentrate wealth and power in the hands of a fortunate few, and to make others mere machines, must involve Anarchy, and bring destruction"—had already taken hold of many minds in the colony, when the cry of the unemployed, from the year 1887 onward, forced the Atkinson Government (1887–1891) into action. Having, however, fulfilled his mission, which was the reduction of the expenses of government, and the suspension of borrowing, this noble-minded Premier—a Cincinnatus and Aristides in one—Sir Harry Albert Atkinson, wrecked in health by his devotion to his laborious public duties, resigned office in January, 1891, leaving it to his successor, the Hon. John Ballance, a successful Irish journalist and political leader, to initiate the State Socialism and Labour Laws which we shall shortly discuss.

Mr. Ballance chose for his colleagues, Sir Patrick Buckley, Messrs. Seddon, Reeves, J. McKenzie, Ward, Carroll and Montgomery. The New Zealand cabinet is technically termed the Executive Council, and is presided over by the Governor, who ceremonially and officially represents the Queen. He "reigns but does not govern," but has very little patronage, and is subordinate to our secretary for the Colonies—an office, which in my humble opinion, ought to be filled by a Colonial ex-governor of long experience. The New Zealand Upper House is called the Legislative Council; now consisting of 46 members, appointed for life, or for seven years, and paid at the rate of £150 per annum. This house is more "Conservative" than the Lower House; and often rejects or alters the Bills that have passed the latter. The House of Representatives, or New Zealand House of Commons, has been cut down to 70 white and 4 Maori members, each of whom is allowed £240 per session, with free travelling to and from the capital, Wellington. Following upon the great Australian strike of 1890, the general election of November, 1890, sent to the capital a body of representatives stronger in the Labour interest than any preceding house. There were but four "gentlemen"; the landowners, merchants, and farmers were represented each by ten members: the 3,000 or more professional men by ten lawyers, one doctor, and six journalists; the army and navy by a major, a captain, and a pensioner; the wholesale trades by two brewers, two mine-agents, a shipping agent, a builder, and a contractor; while the 80,000 wage-earners of the colony sent up seven artisans (two shoemakers, a painter, a tailor, a stonemason, a carpenter, and a lamplighter). If the Labour members, instead of 15, as they are just now in our House of Commons, were 67, this would be the proportion to the whole house that their number bore to the House above described. Such a number of votes would be powerful enough to hold the balance of power in our Parliament, and decide the fate of Ministries. And this is what we are coming to, as soon as Irish Nationalism is satisfied. The new Ministers were able men, but neither land owners nor employers on a large scale. The Opposition were principally Capitalists. To ensure the passage of the new Bills through the Conservative Legislative Council, the Premier, after a brief delay caused by the opposition of the Governor (the Earl of Onslow) on a constitutional objection, promoted to the Upper House twelve of his supporters in the colony, of whom four were genuine working men. Thus a boiler maker, two compositors, and a storeman, were suddenly created "Peers" for seven years, at a salary of £150 a year, and Honourables throughout the empire (since June 15th, 1893).

This was indeed a bold experiment, but it succeeded in its object, viz: the passing of the important Government measures, though these nominees showed no subserviency, but voted according to their judgment, spoke well and frankly, and attended punctually.

The bold and frank spirit in which the Government party undertook the new legislation is well expressed in the following quotation from one of Sir Robert Stout's speeches in support of it:—

> We have a noble opportunity. We stand in many ways in the front rank of nations, and for this reason, that we are not encumbered by privileges; we are not encumbered by prejudices; and we are therefore free to make experiments. I ask the House to make these experiments. I ask the House to believe that these experiments may be made. 'I ask the House to think that even if these experiments fail, still it is our duty to make them.

The first great experiment in State Socialism was the

NEW SCHEME OF DIRECT TAXATION,

whereby a Land Tax, graduated according to the amount held, and an Absentee Tax, along with an Income Tax, also graduated, took the place of the Property Tax, which had borne heavily upon "the masses." In the early days of the Colony, land had been acquired from the natives in large areas, very cheaply, by families who had held it for pasturage, and not for agriculture. The Provincial Governments had sold large blocks to Companies, whose policy had apparently been to retain them for years so that their value might be enhanced, thus still further restricting the land available for the plough. The settling upon the land of desirable immigrants was being checked so seriously by the impossibility of finding land for sale at reasonable prices, that it became an urgent Colonial question how to prevent these accumulations of unimproved estates. Often it was the case that the proprietors lived most of their time in Europe, like the Irish absentee landlords we have heard of, which was not a good thing for the Colony from any point of view. The leader of the Labour Party, the Hon. W. P. Reeves, whom Mr. Ballance had appointed Minister of Labour, tersely and vigorously expressed the policy of this progressive Land Tax—"The graduated tax is a finger of warning held up to remind them that the Colony does not want these large estates. I think that whether partly or almost entirely unimproved, they are a social pest, an industrial obstacle, and a bar to progress." The ordinary Land Tax, at present one penny in the £1, is levied on all properties above £500 in value, all improvements being exempted, and mortgages being separately assessed and taxed to the mortgagee, with certain deductions. The Graduated Land Tax, which includes the Absentee Tax, is thus assessed: up to a valuation of £5,000, the owner of land pays only the ordinary Land Tax, but from this limit up to £10,000, he pays *in addition*, one-eighth of a penny in the £1: from £10,000 to £15,000 two eighths of a penny, and so on, until the value of the land is £210,000, or over, when this tax becomes 2d. in the £1. The so-called Absentee Tax is a clause empowering the Land Tax Commissioner to levy 20 per cent. additional graduated land tax upon owners who have been absent from or resident out of the colony for three years or more prior to the passing of the Annual Land and Income Tax Act. It must be understood that under both these Land Taxes, all buildings, fences, and other "improvements" are exempt from the taxation, which therefore carries out the germ or root-idea of Henry George's Single Tax, being an impost *upon the land itself*, *unimproved by man, higher and higher according to the amount held by the owner.*

The Income Tax was fixed at 6d in the £1 on all incomes over £300, the limit of exemption, up to £1,000; after that 1s. in the £1. This graduation of Income Tax (which I should like to see here, if we must have this hateful tax), is a revival of the original income tax of 1435, and of Pitt's original scheme in 1799. At the end of the first financial year of this new taxation—March 31st, 1893—the results were regarded as successful from the Government point of view. For not only was there an excess of £20,000 payable under the new scheme over the amount realised from the last year's Land and Property Tax, but also there were 9,028 persons relieved from direct taxation altogether; and there were numerous estates offered for sale to the Government at the owner's valuation, highly suitable for immediate settlement. Provision had been made for the purchase of such lands, on certain conditions fair to both parties (owner and Government) which I need not detail. One instance of actual sale will illustrate how this Taxation Act worked. The Cheviot estate, of 84,222 acres, situate in the Nelson Provincial District, just north of the Canterbury boundary, in the Middle Island, was purchased by the Ballance Government for £260,220. It was promptly re-surveyed; a township was laid out, and the whole block advertised for sale or lease in allotments. Within nine months the portions sold for cash realised £78,600; the portions leased in perpetuity (that is for 999 years at four per cent. on its primitive value) bring in a rent of £10,000, and there were still over 46,000 acres remaining for disposal. The State has thus far made a *profit* on the transaction of over £3,000 per annum, and has added several hundred industrious settlers to the population. By the latest accounts

I find that over 270,000 acres more, in various parts of the colony, are under offer of sale to the State. The incidence of the whole set of new taxes was found to fall heavier upon professional men, merchants, land companies, mercantile, manufacturing and insurance associations, and trust estates than did that of the former scheme, while the burdens of tradesmen, bonâ fide farmers, storemen, miners, shepherds, mechanics, and labourers of all classes were much reduced.

The Absentee Tax only realised £668 out of the £70,000 raised by the graduated Land Tax, and will probably become less every year.

THE VILLAGE SETTLEMENT SCHEME,

originated by Mr. Ballance, deserves special mention here, as a successful mode of settling poor but industrious workers on the land. Were it not for poverty, lack of employment, congested towns, and the revival of the land-hunger of former ages, we should have no aggressive State Socialism. All honour to him who invents and carries out a practical plan which relieves all the above miseries, without injuring the State, or infringing the just rights of private property! Mr. Ballance has done this, and deserves well of his country, more especially as he died at the post of duty (April 27th, 1893) worn out with the cares and labours of the Premiership.

At a time when the public money had become exhausted in the construction of railways and other public works, this scheme was adopted to give work and a home to many deserving unemployed men. Twenty-five or more adults, married men being preferred, could join together and take up 100 acres each of adjoining land (Crown property) which was not sold to them, but leased in perpetuity at the rate mentioned above. The Government placed each settler on the land, if he was really indigent; gave him seed and potatoes; and advanced him £10 towards building a shanty or cottage, and £2 10s. upon every acre up to 20 acres to keep him and his family in the necessaries of life, while the clearing, grassing, and cropping were going on. Many settlers repaid their Government by instalments; some defaulted, and some forfeited their holdings. But the majority were successful, and therefore satisfied. The Earl of Onslow draws a cheerful picture of one of these infant settlements:—"The voluntary association of earnest industrious men, under a capable leader, who had formed the settlement, appeared thoroughly contented. Under a spreading *puriri* tree they gave us a luncheon of bread, milk, cheese, honey, vegetables, and fruit, all grown on their own plots. A happy crowd of children played around us; and the only complaints the settlers made when interrogated, were: that the winter rains played havoc with the roads; and that they could not acquire the freehold of their allotments." Up to the date of last report, 900 settlers in the 85 Village Settlements had taken up and improved over 22,600 acres. Although £24,625 have been advanced to them by the State, of which £8,000 have been repaid in rent and interest, the improvements placed on and added to the land, which had been valueless before, amount to £61,700.

I will now briefly review the Industrial Legislation of this Parliament.

THE FACTORIES ACT OF 1891

is admirably framed, and has been administered by a thoroughly efficient staff of inspectors. You may be surprised, perhaps, to learn that far-off New Zealand is rapidly developing manufactures of great variety and elaboration. In 1892, her 2,700 factories and works employed over 25,000 workpeople, of whom 7,300 were females. And when the water-power, now running to waste in its valleys, shall be converted into electrical energy for driving mills, looms, and other machinery, this colony will distance all others south of the Equator in trade of this kind. Besides the usual regulations we have at home as to cubic space, ventilation, and separate sanitary conveniences for both sexes, the New Zealand Act insists upon a separate room for meals; upon an eight-hour day for all those in charge of steam machinery; provides that no work be done after 6 p.m., except by express permission from the inspector, and then as overtime for extra pay; requires that no person under sixteen shall work unless certified as strong and well enough by the inspector, that the limit of work for females and for all youths under eighteen shall be forty-eight hours per week, and that no work shall be done after 1 p.m. on Saturdays. A "factory" or "work-room" is defined as "a room where three or more persons work together." The eight-hour day is not yet legally compulsory in any of our Australian colonies, but it is practically so by the regulations of the Trades Unions, and by universal custom.

THE SHOPS AND SHOP ASSISTANTS' ACT OF 1892

is a boon to this hard-worked class, and goes far beyond our British acts in promoting the comforts of the "young person behind the counter." It is pleasant to be officially informed that "the employers not only attempted to meet the Act in the most generous manner, but showed an enthusiasm which was of the most unselfish character." Seats must be provided for the assistants; a suitable room for meals, and sufficient time for taking them; one half holiday per week for every assistant; and the limit of work-time for females and persons under eighteen is fixed at fifty-eight hours a week. In emergencies, inspectors may grant permission to employés to work overtime, for which extra pay must be given. I may state, from my personal knowledge, that the terrible abuses of the apprentice system which prevail in almost all female handicrafts in this country do not exist in New Zealand. The labour of even a girl of nine or ten has a money value, and is honestly paid. The only conspicuous defect of this Act is that no *special* day is prescribed for the weekly half-holiday; consequently, when meetings were held of shopkeepers in the same line of business, the city wanted one day and the suburbs another; the town and the country district also differed on the subject. But it is pretty certain that now every shop-assistant in the colony obtains his "half-day off." There is but little of the curse of "sweating" in New Zealand, though any person who does work at home for an employer cannot claim the benefits of this excellent Act. On calm reflection, you will, I think, agree with me that it is all but impossible to put down "sweating" in any "cheap labour" trade by law; for, first, it is hard to reconcile the right of entry into private houses with the sanctity of the home; and second, the sweating wage, poor as it is, often stands between the unfortunate worker and starvation. If the State prevents the earning of this pittance, it must either regulate wages in each trade in which sweating exists, or must pension indigent workers—both of which courses are outside the domain of practical politics.

THE DEPARTMENT OF LABOUR,

organised in 1891, with a permanent secretary (Mr. E.

Tregear) and a Cabinet Minister (Hon. W. P. Reeves) at its head, has thus far been a most successful "experiment." The officials of its "Bureau of Industries" issue reports, and publish a journal in monthly parts, all of which constitute interesting reading, and should be consulted by any English mechanic or capitalist who contemplates starting any manufacture in the colony, before leaving this country. Much organising skill and common-sense has been shown in this department, the operations of which have been highly successful in finding immediate employment for new arrivals; in relieving the overcrowding of towns; and in balancing the supply with the demand of labour of all kinds. By strict decentralisation; by widely extended agencies; and by refusal to give aid to the workman except by sending him to private employment, or to necessary and reproductive public works, the New Zealand Bureau of Industries has avoided the causes of failure experienced by the similar Bureau of New South Wales, Victoria, and Queensland. During the first two years (less two months) of its existence, this Bureau assisted 6,467 men, on whom were dependent no less than 12,531 women and children, thus preventing much misery. A large "State Farm" has been secured by the Department at Horowhenua, in the province of Wellington, in order that "elderly men with families, unable to do the heaviest farm-work, may live rent-free upon the State Farm, and be paid for working it by their labour being exercised under co-operative contract; such rural industries being promoted as shall provide work for their families." I may here mention that the production of honey, butter, and cheese *always* "*pays*" in New Zealand, but the same cannot be said of eggs and poultry.

The practice of *co-operative manual labour* is being carried out in felling the bush, in making roads, in saw-mills, in making railways, and other public and private works, and is increasing in popularity. Unemployed men, sent by the Bureau of Industries to any co-operative works, as a rule, honourably repay, by instalments from their wages, the amount advanced to them for rail or steamer fare. The principles of New Zealand State Co-operation are, that the strong, acting with the strong, shall earn a full wage, while the weak shall earn enough to maintain subsistence, but that both shall be given work only where that work would have to be done under any circumstances. And now let us turn to the way in which this Radical, Socialistic, and Labour Parliament has dealt with the Liquor Question.

THE ALCOHOLIC LIQUORS' SALE CONTROL ACT, 1893, is a bold and honest attempt to settle this much-vexed question on the basis of the will of the people, expressed through Licensing Committees in each electoral district, who are elected triennially, and are empowered to reduce, introduce, or abolish licenses without any compensation. Taking a general view of the subject throughout the Colonial portion of our empire in Crown Colonies, the open system of licensing, as at home, but with high fees, is in vogue. But restriction, increasing in the direction of Prohibition, is the rule in all our free Self-governing Colonies. For example, both in Canada and Australasia entire Sunday closing is observed. While resident in Auckland, I had the pleasure of observing the great change wrought for the better by the operation of the Licensing Act of 1881, which transferred the granting of licenses from the magistrates to popularly-elected Licensing Committees. Open drunkenness in the streets became quite rare, and rowdyism on Sunday evenings (the chief colonial trip day) a thing of the past. But neither the

Total Abstinence party nor the publicans were satisfied, and three more Acts, amending the "Principal Act" of 1881, were passed between 1882 and 1889. The curse of intemperance certainly existed in the colony; for, as my late esteemed friend, Sir William Fox, used to remark, "There are 1,500 deaths per annum in New Zealand directly caused by drink — one for each of the 1,500 public-houses." I will condense and describe the chief features of this Act, prefacing them with the statement that both crime and intoxication are decreasing in the Colony, and the *New Zealander-born* is temperate, and often a total abstainer. In fact, although £270,000 worth of alcoholic and malt liquors were imported into New Zealand in 1892, the "liquor interest" is waning, and is less influential than ever in politics, while the New Zealand branch of the United Kingdom Temperance Alliance has been joined by many public men who are not pledged abstainers, and the present newly elected House of Representatives is more strongly "teetotal" than any of the eleven parliaments which have preceded it. I shall take the various subjects of the clauses in the order in which I find them in the Act.

Sections 3, 7. The 62 Electoral Districts into which the Colony is now divided, having each an average of 9,000 to 10,000 inhabitants, inclusive of the four chief city electorates, Auckland, Wellington, Christchurch, and Dunedin, which have an average of 31,000, are constituted licensing districts. A Licensing Committee of eight members is to be elected every three years, commencing in March, 1894, by the votes of all those, whether male or female, who are on the Parliamentary Register.

Sections 6, 7, 11. The Resident Magistrate of the district (corresponding to our stipendiary, but with enlarged jurisdiction and powers) presides over the committee thus elected, for nomination to which any persons trading in fermented or spirituous liquors, and owners of public-house property, are disqualified. But no pledges given to voters before election, nor any strongly expressed views or opinions, shall disqualify any duly elected member of a licensing committee.

Section 12 provides for the granting of licenses under the new Act, and contains eight sub-sections or paragraphs. No woman, whether single or married, shall hold a license, except widows and wives who have obtained, for due cause, Protection Orders from a magistrate. Every person applying for a license must produce a certificate of fitness, signed by the Resident Magistrate. A license is renewable annually, as a matter of right, if no breach of the law has been committed, until the next triennial poll, but if any breach of the law has taken place, or any objection be made and sustained at the annual revision of licensed houses, the renewal may be refused by the committee. No child of thirteen years of age, or under, nor any drunken person, nor any Sunday customer (not being a *bonâ fide* traveller), can be served with liquor, under heavy penalties. The hours of opening are from 6 a.m. to 10 p.m., and all licensed houses shall be closed from Saturday night until Monday morning. An extension of time until 11 p.m., on payment of £5 extra fee may be granted by the Committee, if satisfied of its being for the benefit and convenience of the public. Section 14 provides that in districts where there has been proved to be an increase of 25 per cent. of the whole population since the last census (which in New Zealand is quinquennial), a proposal for increase of licenses shall be submitted to the electors at the poll, and if carried by a majority of three-fifths of the total votes recorded, these being fully one-half of the total number on the roll, the the Committee may grant additional licenses in the proportion of one license to 700 people resident within two miles of the licensed house. Section 5 makes similar provision for sudden increase of population.

Sections 15 and 18 describe the questions to be submitted to the electors, and the rules of the polling. From and after the passing of this Act no license shall be renewed until the electors have previously determined—1st, Whether the present number of licenses is to continue; 2nd, Whether the number of any such licenses is to be reduced; 3rd, Whether any licenses are to be granted. At the counting up of the votes recorded, a simple majority decides the affirmative or negative answer of the electors to the first and second questions. If reduction of licenses is decided, by Section 20 the Committee, as they may think desirable, may close a number of licensed houses not exceeding one-fourth of those in the district, selecting first those against which breaches of the law have been recorded, and next, those which have no proper accommodation for travellers. If question No. 3 is decided in the Total Prohibition sense, namely, that no licenses at all be granted, there must be a majority of three-fifths of the votes recorded, and also it is necessary that at least one-half of the electors on the roll have voted—otherwise, the poll is to be declared null and void, and no second poll can be taken. The somewhat complex paragraph 4 of Section 18 leads one to the conclusion that, if the voters for total prohibition and for reduction join hands, the former may be carried by a much smaller majority than three-fifths of the total electors on the roll. A striking feature of this Act is that all Clubs are to be open to "inspection," and subject to some of the regulations of the Licensing Act, the charter of each club, which is equivalent to its license. being granted by the Colonial Secretary, who can revoke it for certain breaches of law; the secretary or manager being regarded as the holder of a license under the "principal Licensing Act." In any district where total prohibition is legally carried, the granting of any new charter for a club shall be at the Colonial Secretary's discretion.

It will be seen from this sketch of this important Act, many features of which will be at length adopted in Great Britain, I believe, that it goes far in the direction of the Direct Veto. Yet it does not satisfy the teetotallers of New Zealand, for some candidates at the general election of November 28th, 1893, lost their seats because they supported this Government Bill rather than the Direct Veto Bill of Sir Robert Stout. The first election under this Act took place on March 22nd, 1894, and I can give a few of the results as cabled. The woman's franchise, on which I shall presently comment, largely influenced the licensing elections in the direction of Prohibition. In Oamaru and Clutha (Otago, in the Middle Island), total Prohibition was carried, we are informed. In Dunedin and Port Chalmers Prohibition was only lost by 18 and 50 votes respectively; in Wellington the committee elected consisted of three teetotallers and five who advocated reform of the licensed houses; in Christchurch and other districts, the Prohibitionist votes were in a majority sufficient to considerably reduce existing licenses. In Auckland and its vicinity, the elections were void from abstentions. At Napier 1082 votes were informal, many purposely left so in order to make void the election, and thus maintain the existing number of licenses. Everywhere throughout New Zealand the Temperance party were better organised and more energetic than the Liquor party, and carried their candidates by more numerous votes. The Colonial electors, *as a body,* must be satisfied, it would appear, with the Alcoholic Liquors Sale Control Act.

THE ELECTORAL ACT, 1893.

I now come to the concluding part of my paper—a consideration of the most remarkable Act regulating the representation of the people in Parliament ever passed by any free British colony. Its two most striking and novel features are: the Disfranchisement of Electors who do not Vote, and the Adult Women's Franchise; both legislative experiments of the highest interest and importance, the working of which, successful or otherwise, may determine the drift of our next Reform Bill. This Electoral Act became law on September 19th, 1893. It repeals all previous electoral acts. From its 170 sections, I condense the following outline of all its principal arrangements:—

Section 3 defines the terms used in this Act. "Person" includes woman. Words and expressions importing the masculine gender include women except where otherwise expressly stated.

Sections 6, 8, 9, 11–13 provide the qualifications of electors; how to be placed on the electoral roll; and lay down definitely the "one man one vote" principle. Every person (male or female) aged 21 or upwards, who possesses £25 worth of freehold property, or who has been one year in New Zealand, and has resided in the electoral district for three months, he or she not being an alien, lunatic, public offender, or public defaulter, is entitled to the franchise, and may be registered on not more than one electoral roll, however many qualifications he or she may possess in several electoral districts. No woman, although duly registered, can be nominated as a candidate, or elected to the Lower House, or appointed to the Upper House. Copies of the general electoral roll are kept at every post-office in each district, which can be inspected free of charge, and sold at the price of one shilling. Additional rolls are printed whenever 100 fresh names are added.

Sections 61–69 make special provision for seamen and commercial travellers—two worthy classes of men practically disfranchised in Great Britain by reason of their occupations—by means of a certificate from the registrar, termed an "Elector's Right." On the production of this to any collector of customs, or postmaster of any post-office, a voting paper is given, and when duly filled up, sent post free from any part of New Zealand to the returning officer of the district where the elector resides. Candidates for election have free use of public schoolrooms for their meetings (section 157); and all expenses of administration of this Act are paid out of the Public Account of the Colony (section 166). To prevent frivolous or vexatious contests, each candidate must deposit £10 with the returning officer at the time of nomination, which sum is forfeited if he does not poll one-tenth of the votes cast for the successful candidate—but, if otherwise, it is returned to him. Heavy penalties (£20 to £50) are inflicted (sections 94 to 98) for the usual election offences, and even wagering or betting on the result of the poll is punishable by a fine "not exceeding £20" (section 163). The Maoris and half-castes, including women, continue their representation.

Section 126 constitutes the remarkable disfranchising clause: "Every returning officer, after the day of polling, before sealing up the rolls received from his deputies, shall transfer from the said rolls on to a fair copy of the district roll a distinguishing mark to indicate every voter who has voted at the said election . . . and shall transmit the complete roll so marked to the registrar of the district, who thereupon shall erase from the roll the names of all the voters, other than candidates and persons prohibited from voting, who are not indicated as having voted at such election; and for so doing this Act shall be sufficient warrant."

On the 28th November, 1893, the first election under this Act took place. It was the most animated one ever held in New Zealand. Ladies and women of all classes had been eagerly preparing for many months to exercise their new privileges, and were awaiting the opening of the polls long before 9 a.m. Women's committees had selected, catechised, and worked for their candidates. So thoughtfully had they provided for bringing up voters of their own sex to the poll, that members of the committee took it in turn to "mind the baby" while the mother recorded her vote! The male electors were astonished at the rush of thousands of women to the polling-booths. After the rolls had been examined it was found that no less than 90,290 out of 109,461 duly registered women-voters had polled, being about nine-tenths, whereas out of the 302,997 male electors, 72,376 did not vote, rather less than one-fourth. In accordance with the Draconian section 126, 19,171 women, and 72,376 men were struck off the rolls, whereon the *New Zealand Herald*, the leading Auckland daily paper, makes the following comment, significant of how the propertied classes regard abstention:—

> If the number struck off the rolls be compared with the population, it will be readily understood how it has come to pass that local and property influences are being thrust out of political power, while unsettled interests and extremist views usurp their place. Making the proper allowance for deaths and removals—say 3,000 in the Auckland electoral district—it is plain that not more than one-third of the electors exercised their franchise. A culpable political apathy alone can account for this result.

Of course all these electors are disfranchised but for a time, for each can claim re-instatement at the next following revision of the rolls; but the inconvenience and loss of time involved *may* possibly diminish the proportion of abstentions at future elections. It is an important experiment, the effect of which should be carefully watched, for, so far as I know, it is the *first* attempt to *compel* electors to vote in any Anglo-Saxon country. One obvious objection to section 126 is that this examination of the rolls subsequent to an election violates the secrecy of the ballot *quâ* the returning officer and his assistants. The fact of the day of election not being a statutory holiday may account for the singular fact that the greatest proportion of abstentions occurred in the four capitals—namely, in Auckland about one-third of the whole, in Dunedin one-fourth; in Wellington one fifth; and in Christchurch rather less than one-fifth.

Much speculation had been indulged in as to the effect of the new element in this general election—the woman's vote. It was found that candidates of good moral character, especially those who advocated the Direct Veto, and had given in their assent to the "platform" promulgated by the Woman's Franchise League, secured the female vote. This "platform" consisted of the following "planks":—

1. Justice to women by the enactment of equitable laws affecting marriage, divorce, custody of children, injury to person, and social vice. 2. The general improvement of the social condition of women, and the more equitable adjustment of women's wages, together with compulsory arbitration as a means of settling industrial disputes, and preventing strikes. 3. The appointment of women on the Hospital and Charitable Aid Boards; as visitors and inspectors of lunatic asylums, industrial schools, and other public institutions; as factory inspectors, truant officers, and on sanitary committees. 4. The abolition of the Totalisator [a betting machine licensed by the New Zealand Government], and the enactment of more stringent laws for the suppression of gambling, and of cruelty to animals under the name of "sport." 5. The maintenance of the present system of free and compulsory education. 6. The securing to the majority of electors who record their votes to control or

abolish the sale of alcohol as a beverage. 7. The recognition of no political party, but the support of candidates who possess the best reputation for integrity of character, and who will pledge themselves to support the foregoing platform.

The election of Mrs. Yates to the mayoralty of Onehunga, near Auckland—the first Lady Mayor in all her Majesty's dominions—and, about the same time, the choice of Miss Annie Austin as Mayor, on the Prohibitionist ticket, of Pleasanton, Kansas, U.S., demonstrate the power of the female vote, and their ambition to influence municipal affairs. [Since this paper was read, news has reached me that a deputation of the W. F. L. waited on the Premier (Hon. R. J. Seddon) to ask for the removal of the disqualification of women from a seat in either House of the Colonial Parliament.]

There was some disappointment felt by clerical and other friends of the woman's franchise when it was seen that, as a body, their votes were not going to be cast for those who advocated Bible reading (with a time-table conscience clause, and other judicious conditions), in the public schools. This modification of the pure secularity of New Zealand education is urgently called for, in my opinion, and there is now a strong and growing feeling in its favour. The intense earnestness of the women of New Zealand in voting, disposes of R. H. Bakewell's assertion (*Nineteenth Century*, December, 1893), "that 95 per cent. of New Zealanders were adverse to woman's franchise." The Auckland Woman's Political League called a special meeting on Feb. 1, in order to pass a resolution censuring this statement, and to forward it to the editor of that magazine. Doubtless the sweeping comprehensiveness of this measure, which gives votes of equal value to mother and daughter, mistress and servant, the virtuous matron and the *nymphe du pavé*, will create some commotion in families, and in the lowest *stratum* of society. But where families are harmonious in feeling, there will be a distinct advantage in having a solid vote of four, five, or six in favour of respectability, honesty, virtue, and temperance. The great benefit to the body politic of woman's possession of the franchise consists in the weight it will give in the government of the state to the *family, that unit of the social system which is at once its origin, and its surest foundation.* No doubt "faggot votes" are obnoxious to Radical principles, but if a Christian family command a bundle of such votes, who will deny that the purity and righteousness of the House of Representatives will be thereby promoted? The House thus elected in November, 1893, consists of 50 Ministerial supporters, 16 Oppositionists, and 4 Independents. "It is ahead of the former House in character," writes a well informed correspondent from Wellington, "it will be an eminently practical, businesslike, and respectable House, yet very Radical in its political views." The strong influence of the women's Temperance vote is shown by the fact that 42 members out of this House of 70 (white) members have pronounced themselves for a change in the present Liquor Sale Control Act, and of these 25 are pledged to the Direct Veto, which Sir Robert Stout will re-introduce during this session. I do not think that the new privilege given to women will lead to revolutionary legislation, nor tend towards instability of government. For women are by nature more conservative in mind than men, and the ineradicable maternal instinct makes them regard every law, or proposed law, as it concerns their children as well as themselves: a consideration which is a bar to hasty, unjust, or unequal legislation.

On the whole of this Socialist and Labour legislation, I have but small space left for comment. My advice to New

Zealand, just at this stage, is to *Festina lente.* Let each of these new laws be thoroughly worked out for several years, watched and weighed, before repeal, reform, or alteration. It is possible, as I have pointed out in my lecture "The New Zealand of To-day," by *too much* legislation to impair the habit of self-reliance, and the spirit of self-respect of the individual citizen. State Socialism can never create, even in New Zealand, the millenium at which it aims, without the strict and universal observance of the ethics of the Bible. To the end of this age, Egoism and Altruism, knowledge and ignorance, capital and labour, wealth and poverty, will continue in more or less antagonism. The object of all Socialist doctrines is to promote the happiness of the masses. And yet,

> How small, of all that human hearts endure,
> That part that kings or laws can cause or cure,
> Still to ourselves in every place consigned
> Our own felicity we make, or find.

My audience will join with me, I am sure, in hoping that these momentous experiments will turn out for the good of New Zealand. If not spoilt by harassing over-legislation, or invaded by the "professional politician," there is little doubt but that our children or grandchildren will see that noble country populated by twenty millions of our race whose happiness and prosperity will as far exceed that of the dwellers at home as the skies of New Zealand exceed those of Britain in brightness.

RECENT DISCOVERIES AS TO THE ORIGIN AND EARLY HISTORY OF THE HUMAN RACE, CONTRASTED WITH THE OLD IDEAS.*

By JOHN NEWTON, M.R.C.S.

Amongst all the brilliant discoveries of this marvellous nineteenth century, surely those which relate to the origin and antiquity of man, to his affinity with other living things, to his early civilisations, arts, and religions, are among the most startling and interesting to us as men. Some of us have been watchers of this world of thought and endeavour throughout the entire period in which these particular discoveries have been made; and now, as we try to think backwards to the standpoint of fifty years ago, and compare it with that of to-day, we are utterly overwhelmed with the contemplation of the vast progress made. I propose, with your permission, to go a little into the history of these great discoveries, which appears to me more strange and interesting than any tale in the *Arabian Nights*.

In the sacred books of the ancient religions some account of the creation of the world was, doubtless, expected; and such cosmogonies existed in the literature of Egypt, Babylonia, Assyria, Persia, India. We need not linger now over the fragments of these which have come down to our time; they have long ago been discredited and forgotten. But such has not been the case with the remarkable narrative with which the Hebrew Scriptures commence. The account of the creation of the world found in the book of Genesis, or the Mosaic cosmogony, as it is called, was universally accepted as true until a very few years ago. No one called it in question to the smallest particular; it was held to have been divinely inspired, and it formed the first chapter in every history of our race. We were taught that this visible universe of ours came into existence about 6,000 years ago, that the parts of which it is composed made their appearance in a certain definite order, in the space of six natural days. On the first day light appeared. On the second the firmament or sky separated the waters above from the waters beneath the firmament. On the third day the waters drew away from the dry land, and upon it a varied vegetable life, like that which now exists, made its appearance. On the fourth day the sun, the moon, and the stars all appeared. On the fifth day fish in the waters, and birds in the air. On the sixth day *all animals* that live upon the earth, *including* man, came into being. And the man, we are told, was created in God's own image, was endowed with the glorious gift of language, and taught the rudiments of religion. The early men lived 600 to 900 years, and by the fourth generation from Adam had progressed so rapidly in the arts, that they had invented various musical instruments, including the organ; were well acquainted with the chief metallic ores, and the mode of smelting them, and were skilled artificers in brass and iron. Then occurred a general deluge, which covered the whole earth to the tops of the highest mountains, and destroyed every living thing, man included, except only Noah and his family, who were saved by floating above the waters in a vast ark that he had built, which included not only themselves but three pairs of every bird and beast. All this happened about 4,200 years ago. When the waters had subsided, Noah and his three sons, with their wives, descended from the ark and went forth to people the world.

---

* The illustrations to this paper are taken from Tylor's *Anthropology*, having been most kindly lent by Messrs. Macmillan & Co., the publishers.

We must accord to this wonderfully picturesque story great merit, for it explained the origin of things to the entire satisfaction of the most cultivated nations of the world for thousands of years down to our own time. And yet, if they had but looked for it, beneath their feet lay abundant evidences of the utter groundlessness of the whole story. How slow even accomplished geologists were to realise the plain truth we may see if we turn to Buckland's great work, published in 1823, *Reliquiæ Diluvianæ, or Observations on the Organic Remains contained in Caves, Fissures, and Diluvial Gravel, &c., attesting the action of an Universal Deluge*, by the Rev. W. Buckland, F.R.S., Professor of Geology in the University of Oxford. He gives a full account of all the principal caves which had then been discovered in Germany, France, and England, containing vast deposits of the bones of extinct animals, as elephants, rhinoceroses, hyænas, some of them of gigantic size, far exceeding any species now existing. These he calls antediluvian monsters. Their remains, he supposes, were washed into these caverns or fissures in the strata of the earth at the time of Noah's flood, and have thus been preserved for the astonishment of after times. He quotes Cuvier, in his great work on Fossil Bones as agreeing with him that the era of this great flood which overwhelmed the earth "*cannot* have exceeded 5,000 or 6,000 years ago," p. 51. These were Dr. Buckland's words so late as 1823, and in dedicating his work to the Lord Bishop of Durham, he writes that the results of his enquiries afford "the strongest evidence of an universal deluge," and of "the truth of the Mosaic records."

In his *Bridgewater Treatise on Geology*, 2 vols., 1837, he acknowledges that there are many discrepancies between the order of creation recorded in Genesis, and the facts brought to light by the new science of geology. Thus, he says—the evidence of organic remains, as far as it goes, shows the origin of plants and of animals to have been contemporaneous. Yet he considers that all may be reconciled by supposing that the words—"In the beginning" imply "an indefinite period of time, during which many revolutions had taken place on the earth ; but as they were wholly unconnected with the human race they are passed over in silence by the sacred historian, who only records the creation of its present animal and vegetable inhabitants." Fragments of a human skull had indeed been met with in a cave, associated with the bones of extinct animals; but he suggests that some man had wandered in there, had lost his way, and perished. In another cave many human bones were found; here he suggests that a battle had been fought thereabout, and the bodies of the slain hastily interred in the antediluvian cavern.

Such were some of the efforts made to reconcile the ancient story with the new discoveries, before 1847, when the famous work of M. Boucher de Perthes came like a new revelation to the world. Dwelling in a district peculiarly rich in antiquities, he for many years made numerous explorations to unfold its archæology, and zealously took advantage of all excavations made for building or other purposes. He gives a very interesting account of the successive layers of pottery found at various depths in Amiens and Abbeville. First, he met with potteries contemporary, or nearly so, in the recent soil. In a second layer of considerable depth, old glass, and fragments of mediæval art ; but even this had an appearance of having been disturbed. The third layer, which extended through a thousand years, as evidenced by its coins, contained various kinds of pottery, Frankish, Gaulo-Roman, and Roman, differing greatly as to the progress they represented in the Ceramic art. In the fourth layer a very different kind of pottery appeared, but evidently burnt and made at the wheel, which he called Gaulish, deposited before the Roman occupation. In the fifth layer all trace of metals had disappeared, and it contained potteries so different in their character that he could not doubt they were the work of numerous generations, embracing a long series of ages. The sixth layer contained potteries differing considerably, but all evidently *hand-made,* without the potter's wheel, some baked; the oldest only sun-dried, and fragments of such were found even at depths of twenty feet below the surface. But traces of man were found much lower than this. M. de Perthes gives sections of the gravel pits near Abbeville. *Sixteen* distinct layers were cut through before reaching the chalk, all, except the highest three, apparently undisturbed. In the lower layers, at depths of from fifteen to thirty feet, the workmen met with numerous flints, rudely-fashioned by chipping into forms resembling wedges, spear-heads, knives, scrapers, and hatchets. They were from three to nine inches long; the oldest deposited being water-worn, and crusted with a deposit of chalk, like the other stones amidst which they lay. Yet in spite of their rude form and aspect, no one could doubt that they were as clearly works of human art as a Sheffield knife. In digging for gravel the workmen met with great numbers of large rude flint implements, at fifteen feet depth, and then again at from twenty-five to thirty feet, always associated with the bones of extinct animals, such as the mammoth or hairy elephant, the hippopotamus, the cave lion, bear, and hyæna, and the rein-deer, but no human remains.

A much more recent deposit in time than the latest of these alluvial gravels is the peat, which in the valley of the River Somme attains to a thickness of 25 to 30 feet. Yet it is only in the most superficial layers of this that any remains which can be referred to historic times have been found. Thus, within three feet of the surface, all the Mediæval, Roman, and Gaulish remains yet discovered are contained, and M. Boucher de Perthes, calculating thus from the known to the unknown, arrived at the conclusion that the oldest layers of peat may have been deposited 30,000 years ago. He found that whilst metal weapons and ornaments were to be met with in the upper layers of the peat, there was an entire absence of metals below. But in their place an abundance of stone and flint weapons and tools; these, however, were quite unlike the rude stone weapons of the drift gravel beds, they were finely finished, elaborated into many new forms, and had been sharpened and polished by rubbing or grinding. Bones of animals and shells were found at all depths in the peat, but these were of the same species as are now inhabiting Europe; whereas the large, rude flint implements found in the drift gravel were associated with the bones of animals long since extinct—a convincing proof of the vast interval of time that must have elapsed since the men of the Drift period hunted the mammoth, the rhinoceros, and the hyæna.

These startling discoveries excited the liveliest interest. Many other observers had recorded similar facts, but no one before M. de Perthes had had the courage to draw the only legitimate conclusions. An immense impetus was given to the whole subject. Those remarkable caverns, found in many lands, containing remains of extinct animals, were eagerly explored, and human bones, pottery, rude ornaments, even pictures carved on bone, were discovered. The Swiss pile-dwellings and the Danish kitchen middens, British cromlechs, barrow graves, and hut-villages, have all yielded a rich harvest of results, uplifting the veil from a long-forgotten past, and enabling us to write, at least in outline, many a lost chapter in the history of our race. The results obtained may thus be summarised. Man appeared upon this earth very late in geological time, and his remains are all found within a few feet of the surface. Not to speak of all the fossil-bearing strata, teeming with proofs of animal and vegetable life, the coal measures alone in South Wales attain to a thickness of 8000 feet, and these are built up mainly with the remains of ancient life. But neither in France nor in England have any remains of primitive man been discovered at depths of 100 feet, and they are usually much nearer the surface, We first come upon his traces in the form of rude flint weapons, knives, and scrapers, associated with the remains of animals long since extinct. These belong to the end of the Glacial period, or Age of Ice, when these islands were part of the continent of Europe, when herds of hippopotami issued from the North African rivers, such as the Nile, and may have swum in a few summer days from rivers in the south to the Somme, the Thames, or the Severn, making timely retreat to the South of Europe before the snow and ice set in. At this era all Northern Europe was covered with a great ice sea. Of our own island only the most southern portions could have been inhabitable, and it is chiefly in the valley of the Thames and its tributaries that these earliest traces of man in Britain have been found. This has been called the Palæolithic, or Early Stone Age, which, according to Lyell's calculations, may have begun 800,000 years ago, or even more. It must have lasted for a vast period of time, since rude flint implements almost identical in appearance have been met with at a depth of 15 feet, and again at 25 to 30 feet in the same gravel pit. To the more superficial, and therefore recent of these, probably belong the remains found in caves, bespeaking some little advance in civilization. Then occurs a sudden break in the evidences of man's existence, so far as we can judge, in France and England. The Palæolithic man has disappeared with the Ice Age, and when we come upon his traces again, it is under conditions similar to those which now exist. Bones of domesticated animals, the ox, the sheep, the goat, are found with those of man; the plants and animals are those with which we are familiar; no trace of metals yet, but a great variety of stone and flint tools, ingeniously, minutely wrought, finished by rubbing and polishing. Needles of bone, amber and jet ornaments are also met with, denoting a great advance in civilization. This—the Neolithic, or later Stone Age—appears to have lasted in Switzerland about 7000 years. Many savage tribes are found, even in our own day, to have advanced no farther than this stage. Then came the age of metals, gold, copper, and its alloy with tin-bronze. And this Bronze Age, as it is called (which lasted, according to some archœologists, about 3000 years), was succeeded by the Iron Age, in which we live, and with the advent of which history begins.

Thus Homer, 1000 B.C., telling of a by-gone age, makes the warriors at the siege of Troy fight with bronze spears and swords; whilst Hesiod, soon after, sings of a time when copper was used and iron was unknown. But when Julius Cæsar landed in England 55 B.C., he found the Belgæ and the South Britons well acquainted with the use of iron; they forged iron anchors and chains for their ships. So much for the *antiquity* of our race, which, though it be but of yesterday, in the long procession of life on this earth, is really of vast duration when compared with the brief span of human existence. That problem has at least been approximately solved.

The next question is how did man originate? This has always been held (as we saw in the Hebrew account of creation) to be only part of the general question as to the origin of species — that mystery of mysteries to the naturalist. The old idea was that each species was a separate act of creation, and had always been quite independent of every other from the moment that it suddenly came into being. But this explained nothing. And so matters remained until Darwin appeared, whose profound generalizations have shed a flood of light upon every department of biology. Darwin maintains that all species, so-called, are but strongly marked and permanent varieties, which have mainly arisen from two causes — first, from the variability of all living things. No two are exactly alike, as we see every day even in the members of the same family. Second, from the struggle for existence amongst all organic beings everywhere, which inevitably follows from the fact that they tend to increase much more rapidly than their means of subsistence. As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary, however slightly, *in any manner profitable to itself*, under the complex and sometimes varying conditions of life, will have a better chance of *surviving*, and thus be *naturally selected.*

From the strong principle of inheritance, any selected variety will tend to propagate its new and modified form.

On this theory, all living things are connected in one chain of being. The grand fact that all extinct can be classed with all recent forms, naturally follows from the living and the extinct being the offspring of parents who

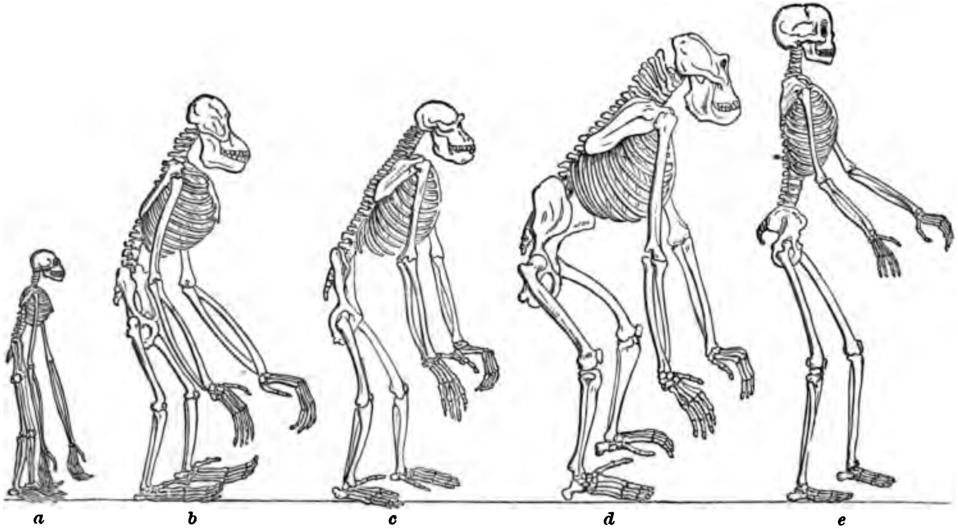


Fig. 1.—SKELETONS OF APES AND MAN.
a, gibbon; *b*, orang; *c*, chimpanzee; *d*, gorilla, *e*, man (after Huxley).

have sprung from the same common stock. Recent forms are generally looked upon as being, on the whole, higher in the scale of organization than ancient forms; and they tend to be higher, in so far as the later and more improved forms have conquered the older and less improved ones in the struggle for life. They have also generally had their organs more specialized for different functions. This fact is perfectly compatible with numerous beings still retaining simple and but little improved structures, fitted for simple conditions of life; it is likewise compatible with some forms having retrograded in organization by having become, at each stage of descent, better fitted for *new* and *degraded* conditions of existence. Darwin points out vast numbers of facts which are for the first time readily explained by his theory. Thus, the similar framework of bones in the hand of a man, the wing of a bat, the fin of the porpoise, and leg of the horse—the same number of vertebræ forming the neck of the giraffe and of the elephant—and innumerable other such facts, at once explain themselves on the theory of a common descent, with slow and slight successive modifications.

Fortunately for our purpose, he has himself shown, as no one else could have done, the flood of light that his theory throws on the origin of man in a separate work entitled, *The Descent of Man*, published in 1871. It has long been known that man is constructed on the same general type or model as other mammalia. All the bones in his skeleton can be compared with corresponding bones in a monkey, bat, or seal. So it is with his muscles, nerves, blood-vessels, and internal viscera. The brain, the most important of all the organs, follows the same law. Every chief fissure and fold in the brain of man has its analogy in that of the orang. Their brains do not *exactly* agree, nor could perfect agreement be expected, for otherwise their mental powers would have been the same. Man is liable to receive from the lower animals, and to communicate to them, certain contagious diseases, as hydrophobia, small-pox, diphtheria, glanders, cholera, etc., and this fact proves the close similarity of their tissues and blood, both in minute structure and composition, far more plainly than does their comparison under the microscope, or by chemical analysis. Monkeys are liable to many of the same non-contagious diseases as we are, such as catarrh, consumption, apoplexy, inflammation of the bowels, and cataract in the eye. The younger apes often die from fever when cutting their teeth. Medicines produce the same effect on them as on us. They become fond of tea, coffee, and spirituous liquors, and will also smoke tobacco with pleasure. Man is infested with internal parasites, and plagued with external ones, all of which closely resemble those infesting other animals. The whole process of that most important function, the reproduction of the species, is strikingly the same in all the mammalia, from the first act of courtship by the male, to the birth and nurturing of the young. Monkeys are born in almost as helpless a condition as our own infants, and in some the young differ quite as much from the adults as do our children from their full-grown parents. It has been shown by Hæckel *that every animal, in its development before birth, climbs up its own ancestral tree.* Certainly, man commences as a particle of animated jelly, as simple in structure as the lowest monad. Later on, the embryo can hardly be distinguished from that of other members of the vertebrate family. At this period, the arteries run in arch-like branches, as if to carry the blood to gills or branches which are not present in the higher vertebrata, though the slits on the sides of the neck still remain, marking their former position. At a somewhat later period, when the extremities are developed, the feet of lizards and mammals, the wings and feet of birds, no less than the hands and feet of man, all arise from the same fundamental form. It is quite in the later stages of development that the young human being presents marked differences from the young ape, while the ape departs as much from the dog in its development as the man does. At one period the human embryo possesses a true tail, extending considerably beyond the rudimentary legs, which fortunately disappears; and the convolutions of the brain in a human fœtus at the end of the seventh month reach about the same stage of development as in a baboon when full grown. If it be asked, does man originate in a different way from a dog, bird, frog, or fish, the answer is not doubtful for a moment; without question, the mode of origin and the early stages of the development of man are identical with those of the animals immediately below him in the scale; without a doubt, in these respects, he is nearer to the apes than the apes are to the dog.

Man, as we see him, differs conspicuously from the monkeys in being almost naked of hair. But the different races differ much in hairiness. The Ainos, that curious race of dwarfs, the aborigines of Japan, are very hairy. So also are the aborigines of Australia; and I have seen a family from Burmah who were covered, both sexes, with shaggy hair, even on their faces and foreheads. No one supposes that the nakedness of the skin is any direct advantage to man; his body, therefore, cannot have been divested of hair through natural selection or the effects of climate, but may safely be attributed to two causes, the complete covering of the body by clothes, and sexual selection, acting through unnumbered ages. "There is no woman for a hairy man," is a New Zealand proverb. And the King of Siam had to bribe a man to marry the first hairy woman in a hairy family; and she transmitted this character to her young offspring of both sexes. Idiots are often very hairy, and they are apt, in other characters, to revert to a lower animal type. Some races of men have the canine teeth projecting considerably beyond the others, as in the anthropomorphous apes, but in a less degree. Of the very few skulls that have been discovered in caves associated with the bones of extinct animals, in several cases the canines projected largely, and in the Naulette jaw they are enormous.

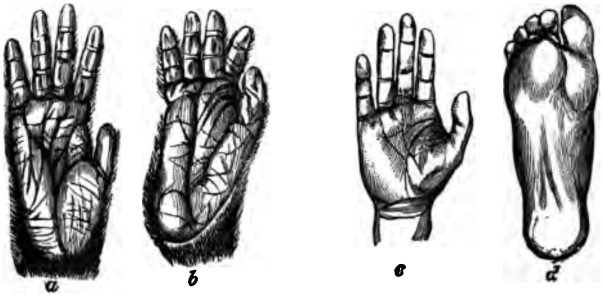


Fig 2 —*a*, hand, *b*, foot, of chimpanzee (after Vogt); *c*, hand, *d*, foot, of man as modified by ages of disuse as a grasping instrument.

The hands of the higher apes are constructed on the same general principle as our own, but are far less delicate in their adaptations. They are, however, well fitted for climbing trees, and they seize thin branches or ropes with the thumb on one side, and the finger on the other, as we do. They walk often on the hind legs alone, but oftener support themselves on the knuckles or palms, which is easy with their long arms. Now, if it be an advantage to man to stand firmly on his feet, and to have his hands and arms free, of which, from his pre-eminent success in the battle of life, there can be no doubt, then the progenitors of man would become more and more erect, whilst the forelimbs or arms would become shorter, as they were less used to support the body; the feet being differentiated for support and progression only, the hands for innumerable other offices. Probably the favourable difference which gave man his start in the struggle for life was a rather better brain. And as early man became more erect, progression would be handed over to the feet, whilst the hand, the all conquering hand, would then develop its marvellous powers unrestrained.

Much stress has been laid on the great size of the brain in man as contrasted with that in the largest man-like ape. But there is great difference among the various races of men,—thus, the average brain capacity of the Australian aborigines is 80 cubic inches, that of the European 92, and Huxley states that the difference betwixt the highest and lowest ape is much greater. Dean Swift used to say that he hated monkeys—they reminded him so of poor relations! And certainly their projecting muzzles, prominent teeth, retreating foreheads, and prominent supraorbital arches, are repulsive enough. But many

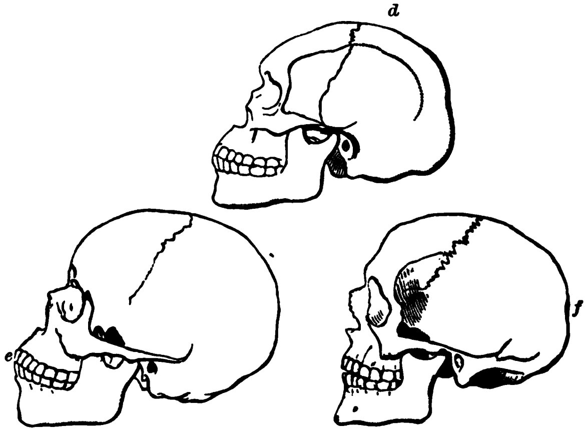


Fig. 3.—Side view of skulls. *d*, Australian, prognathous; *e*, African, prognathous; *f*, European, orthognathous.

savage and degraded races of men approach them not a little. It is surely a most remarkable corroboration of Darwin's hypothesis that the most ape-like human skull which has yet been produced was discovered in 1857 in a limestone cavern at Neanderthal, associated with the remains of the mammoth and other extinct animals.

Man has, no doubt, undergone a great amount of modification, in comparison with the higher apes, which he so closely resembles. And many seem to expect that every intermediate form shall be produced, or they will *not* believe. But we are only beginning to study the vast series of extinct forms, whose remains lie beneath our feet, and many strange revelations await us. In a very few years, as things go, the orang, the gorilla, and the chimpanzee, will have disappeared, and a century hence the *argument against* the derivation of man from some ape-like form will appear far stronger, so far, than at present. But the evidence in its favour, brought forward by Darwin, is so overwhelming, that to take any other view is to admit that our own structure, and that of all the animals around us, is a mere snare laid to entrap our judgment.

A most interesting question now presents itself—In what part of our world did man first appear? Where was his birthplace? As we have shown that his nearest kith and kin are to be found in the Simiadæ, or monkey family, we naturally look for *them*. This family is divided by naturalists into the Catarrhinæ or Old World monkeys, inhabiting Africa, the warmer parts of Asia, and the Malay Archipelago, and the Platyrrhinæ or New World monkeys, found in Brazil and Peru. The Old World monkeys have a nose with nostrils separated by a narrow partition, close together, and opening downwards; the orangs, gorillas, and chimpanzees have no tail, but, if present, the tail is never prehensile, and there are thirty-two teeth, as in man. But the New World monkeys have flat noses, with widely separated nostrils, opening straight in front; they have all long tails, which they constantly use for grasping, and they have thirty-six teeth. They are, therefore, *diverging* from the human type, not approximating towards it.

Now man unquestionably belongs in his dentition, in the structure of his nostrils, and many other respects, to the Catarrhinæ or Old World division. And as the anthropomorphous apes, having no tail, no callosities, form a sub-class, approaching the nearest to man, we may infer that he has diverged at some remote period from this sub-group. It is therefore probable that Africa was formerly inhabited by extinct apes, closely allied to the gorilla and chimpanzee, and as these two species are now man's nearest allies, it is more probable that our first progenitors lived on the African continent than elsewhere. At present, the rock of Gibraltar, just opposite the African coast, is the only spot in Europe inhabited by the monkey tribes. But Darwin thought it was useless to speculate on this subject, as two or three anthropomorphous apes, one the Dryopithecus of Lartet, nearly as large as a man, have been discovered in strata of the Miocene age in Southern Italy and Attica; and since so vastly remote a period the earth has certainly undergone many great revolutions, affording ample time for migration on the largest scale.

When we take into account, however, the highly specialized frame of man, differing so widely from his nearest congeners, and the narrow limits within which it has been modified in the different races, it seems impossible that he can have arisen at many different points of the earth's surface wide apart.

Man, without arms or arts, must have been the most helpless of animals, since he alone is thrust naked into the world, unarmed, unprovided with one single weapon of defence. His first home, then, must have been some sunny clime, where bleak winter is unknown—where the trees are never without leaves or fruit—where shelter and clothing, storehouse and barn, would be little needed—where the earth yielded abundant increase without tillage, and where the sheep and the goat offered themselves as passive subjects for man. Such, then, must have been the cradle-ground of the human race, until—their faculties, strengthened by exercise, and their experience of natural things enlarged—they were fitted to go forth into new climes and strange regions, to commence the colonization of the world.

At a very early period primitive man, following the course of the Nile, reached Egypt, and there finding a perfect climate and a fertile soil, such as no other country in the world presents, settled down to develop through untold ages the earliest civilization of which we have any knowledge. When Herodotus visited Egypt, 450 B.C., he was told by the priests:—"You Greeks are but children to us." And we are now learning that they spoke the truth; for their earliest existing monuments, as the Great Pyramid, erected some 6,000 years ago, reveal the most astonishing knowledge of engineering, of constructive skill in architecture, and of astronomy.

They constructed true arches ages before the Cloaca Maxima at Rome, which was long supposed to be the oldest extant, and used iron extensively thousands of years before the Greeks. They were musicians, painters, potters, workers in glass and metals, erected temples of unsurpassed grandeur, invented systems of writing from which those of other nations have been derived, and created a vast literature, the key to which has but lately been discovered. Another amazing fact is that the *very* *earliest* remains of Egyptian art are the finest, and we stand aghast at the untold ages of slow progress which lie in the dim background. Colossal in its art, profound in its philosophy and religion and in its knowledge of the arts and sciences, Egypt exhibits the astonishing phenomenon of an elevated and complex civilisation at a period when the other nations of the world were almost or altogether unborn. An attempt was made in 1851–6, by making numerous excavations and borings, always through sand, becoming harder and harder, the successive deposits of the Nile, to estimate the age of Egyptian civilisation. But they never reached the rock, and even at seventy-two feet depth, which represented the deposits it was supposed of 15,000 to 30,000 years, fragments of pottery and burnt brick were still found. Surely a rich harvest of discovery awaits explorers in Egypt.

Let us contrast its age with that of the other ancient centres of civilisation. Babylonia, inhabiting the plains of Chaldea, watered by the lower streams of the Euphrates and the Tigris, attained the height of its culture and power 1200 B.C. Assyria, its neighbour, 700 B.C. The Persian Empire was at its height of power under Cyrus and Darius Hystaspes, from 537 to 485 B.C. The Greco-Macedonian Empire reached its greatest extent at the death of Alexander the Great, 323 B.C. And the Augustan age of the Roman Empire ended with the death of Augustus, 14 A.D.

Thus the claim of Egypt as the first great centre of civilisation on our earth is fully established, and can scarcely be estimated in thousands of years. We notice also that these early empires were grouped around the Mediterranean Sea, all the earliest along its *southern* shores. And from this as a centre, all the lines of migration to the rest of Europe seem to tend, whether we trace their tribes, civil culture, usages, languages, or religions.

Thus we have seen that the south of England was inhabited even in the early Stone Age, whilst the rest of the island was buried under a sea of ice. And then long ages passed ere the climate became milder, and man spread slowly further north. But the Late Stone Age, the Neo-lithic, had then arrived, and to this all the earliest remains in the Midlands, the northern counties of Scotland, those found in cairns and barrows, or turned up by the plough on the Yorkshire wolds, belong.

It is a significant fact, proving how scanty the population of Lancashire was at that time, that in the whole length of the Manchester Ship Canal, a vast trench 35 miles long, not a vestige of either stone age has been found. The first traders to Britain were the Phœnicians, the merchant princes, the English of the ancient world, whose vessels traded round the entire Mediterranean Sea, and who occupied every point on the coast of Northern Africa and Southern Asia from Carthage to Sidon. Our earliest British coins, which are only found in the *South* of England, are copied from the coins of Gaul, and these from the coins of Phœnician Carthage and of Philip of Macedon. A large trade was carried on by the Phœnicians overland from Marseilles through Gaul to Britain. Julius Cæsar, I may remind you, landed in Kent, as also did Saint Augustine 600 years later.

Take another test—the Alphabet. All our progress is based on the art of writing, without which, we should relapse into comparative barbarism. How has it come to us as to all the world. The very name Alphabet is that of the first two Phœnician letters; and we now know—thanks to M. de Rougé—that the Phœnicians selected 21 signs from the complicated writing system of Ancient Egypt, added the letter O to represent the 22 consonants of Semitic speech, and thus invented a pure Alphabet. One of the greatest triumphs of the human mind, having been effected *only once* in the whole history of the world.

If we turn to the great Religions, where did they arise?

The loftiest of all, which has linked itself with the highest civilizations and the most progressive races, had its birth, like Judaism, in a small country adjoining Egypt. And Mohammedanism, the third of the only three monotheistic faiths in the world, had its origin in Arabia. Such are but a few of the many facts which point to Egypt and its neighbouring countries as the first centres of human civilization. There is indeed something startling to find so many remains of the civil life, the arts, the religious symbolism of Egypt, Babylonia, and Assyria, which have come down even to our times through Greece, Rome, and Byzantium. In the story of our race, as revealed by recent discoveries, nothing astonishes us so much as the extremely slow progress which appears to have been made through many thousands of years, and the rapid pace at which we are going ahead. But it behoves us to remember that these discoveries lead us back to a time when man started as a hairy ape-like being, just raising his head a little higher than the other animals around him. Natural selection implies no necessary progression. He might have retrograded to the point whence he started, or stood still, just able to hold his ground unaltered for countless ages, like the others. But the enormous advantage of possessing a little better brain, joined to those social habits which are amongst man's best heritage, and the sources of his preeminence, stood him in good stead. The first man who discovered how to fashion tools and weapons out of flint-stones had made an enormous advance. Such also was the discovery of a mode of making fire, and the potter's art, for without these, there could be no cookery, no working in metals. Fire-making was, perhaps, the greatest invention ever made by man, if we except that of language; for language also must have had a beginning.* How late that may have been is shown by the discovery that some of the earliest jaw-bones, as those found in the caves at La Naulette and Neanderthal are wanting the mental tubercle or ridge, to which some of the complex muscles of the human tongue are attached. Lucretius and Horace, following the Epicureans, held the same idea 2000 years ago. The latter poet sings:—

> "When men crept forth from the newly-formed earth, a dumb and filthy herd, they fought for acorns and sleeping places with their nails and fists, then with sticks, and at length with weapons which, taught by experience, they had made. Then they invented names for things, and words to express their thoughts; after which they began to desist from constant war, to fortify cities, and to enact laws."—*Satires*, i, 3.

When, in the fulness of time, the beginnings of language were laid, man's wants were few, and but few words were needed. Even in our day all sorts of gradations exist. Compare the series of clicks which, filled out by variety of tones, pantomime and grimace, make up the speech of the Bosjesman with the copious eloquence and extensive vocabulary of Homer or Shakspere. The interval is surely greater than that between the highest animals and the lowest man. Some years ago, a clergyman in a secluded Somersetshire village, struck with the few words used by the rustics, made a vocabulary of them, and found that they only amounted to about four hundred all told. One of them, having to give his evidence, as eye-witness, in a case of manslaughter, thus spoke :—" He'd a stick, and he'd a stick, and he hit he, and he hit he, and if he'd a hit he as hard as he hit he, he'd a killed he, and not he he." Primitive enough that, surely. Probably the language of this rustic was an exact measure of his intellectual status.

---

* The origin of language was not a discovery that was made once for all, like the art of fire-making. The faculty of expressing ideas by the invention of appropriate sounds or words is common to the whole human race, and is continually being exercised even now, when needed. It is worthy of remark that birds, though inferior in intelligence to the higher animals, are far superior in vocal utterance; some, as the magpie and the parrot, readily imitating our human speech. Could we but add the vocal and mimetic powers of the parrot to the acute intelligence of the monkey or the dog, what an advance towards humanity would be made! Perhaps the favourable variation may have occurred when a highly sociable form of anthropoid ape developed powers of vocal imitation, and thus laid the foundations of language, the most precious acquisition of our race.

It is a pregnant thought that beneath our feet are the successive layers of many civilizations, and this the more as we stand over the cradle grounds of the human race. Proofs of gradual evolution from a long dead and barbarous past are to be found in many a ceremony and custom of the present. Take marriage, which in early stages of society is a civil contract. Thus among the wild hunting tribes of Nicaragua, the young fellow who wishes a girl for a wife kills a deer and lays it with a heap of firewood at the door of her parent's hut, which symbolic act is his offer to hunt and do man's work for her. A Zulu will offer five oxen to the parents of a girl. Here is a dowry and buying a wife, things not unknown still with us. Among peoples of higher culture formal promises and ceremonies came in, and the priest was summoned to add the sanction of religion to the union. Then there is marriage by capture, perhaps the most primitive of all. Among many fierce forest tribes, who still reproduce for us our own dead past, the warriors make forays on distant villages, and carry away the younger women for wives. The Old Testament furnishes instances of this, as when the men of Benjamin carry away the daughters of Shiloh, dancing at the feast. And early Roman history, as we see in the rape of the Sabine women. But in Plutarch's time (*i.e.*, about the time of Christ) it survived only as a ceremony, and the bridegroom's friends went through the pretence of carrying off the bride by violence. Even in the last century, the Welsh bridegroom, attended by his friends, mounted and armed for fight, carried off the bride on his horse, after many a blow. In our day the slippers and old shoes, which were formerly flung at the bridegroom have degenerated into showers of rice, as in India. Tattooing, so common among savage tribes, is still practised among our soldiers and sailors. And the custom of painting the face and body is yet seen in the clown and pantaloon of our theatres. But the task would be endless of tracing the connecting links between a dead past of ages ago and the living present. Nearly every phase can be traced in existing races of men, whom we find occupying every grade between our own advanced culture and some degraded form of humanity that appears just capable of holding on to life, snatching a miserable subsistence from the spontaneous bounties of nature. The lowest, however, now present with us, have advanced as far as the Neolithic or Later Stone Age, and possess the rudiments of a language.

To recapitulate. We have seen that the ancient Hebrew ideas as to the origin of Man have been completely set aside. A vast weight of evidence has been brought forward within the last fifty years to prove that Man is but the last and highest term in a long chain of being; his nearest living kindred being the larger anthropoid apes. That though his appearance on the world's stage was very late, yet assuredly he may claim an antiquity to be reckoned by hundreds of thousands of years. We have spoken of his lowly origin, of the region where he first appeared, of the early and late stone ages, succeeded by the age of bronze, and lastly by that of iron, in which age we are living. We also glanced at some of the vestiges of earlier and ruder civilizations still remaining in our manners and customs.

In the story of our race, as thus revealed, one cannot but be astonished at the slow progress made through tens of thousands of years, and the rapid rate at which we are now travelling. But through those long ages of the past, the art of writing had yet to be discovered, with all its wondrous results. Men dwelt in thinly peopled lands, and nations dwelt apart. Thus the knowledge and progress of the few were lost to the many. The very essence of our civilisation, which gives it its splendid impetus, consists in having fused into one the intelligence and labours of the whole. Inheriting the experience and discoveries of all the ages, the nineteenth century man has a hundred million brain power, all united in one continuous effort to advance the human race. The art of writing, intensified a million-fold by the printing press, the steamboat, the railway, the electric telegraph, gives him the command of the world. The discoveries, and efforts, and thoughts of the highest minds become the common property of all; and we travel with ever accelerating velocity towards an unseen goal. Some have pictured a golden age of the past, and would see in the history of man but one mournful sequence of degeneracy and decay, physical as well as moral. The startling discoveries at which we have glanced lend no support to such gloomy theorists. They tell only of incessant progress, however slow it may have been in the earlier stages, and we have passed for ever out of the shadow of those times into a fuller day.

THE NEW ASTRONOMY:
AN ACCOUNT OF ASTRO-PHOTOGRAPHY.

By R. C. JOHNSON, F.R.A.S.

The benefits derived by Astronomy from the discovery of the photographic art were for many years extremely small.

Between 1840, when Professor J. W. Draper took the first lunar daguerreotype, and 1857, when the observatory at Cranford, specially designed for photographic astronomy, was founded by the late Dr. Warren de la Rue, the results obtained were principally of value in so much as they indicated possibilities of future achievement.

During the succeeding ten years photographs of the moon of considerable merit were obtained, and in recording the phases of total eclipses of the sun and the numbers and distribution and changes of solar spots photography became an efficient ally to astronomy; then for a further period of fifteen years matters remained almost stationary, although so far back as 1864 Rutherfurd, who had accomplished splendid results with a telescope of 11¼ inches aperture in attempts at stellar photography, predicted a great future for this science.

During 1882 Astro-photography entered upon a brilliant career, in which it has already set a mark upon the century, and is worthily entitled to rank among epoch-making discoveries for the advantages conferred upon science. This came about primarily by the invention of the gelatine process, by which a reduction of the time needed for the exposure of plates to about one-fiftieth part of that which had previously been requisite was effected—a condition the necessity of which will be obvious when we remember that even with the most rapid plates exposure to the faint rays of some celestial objects has to be sustained for as many as twelve or thirteen hours, in order that the slightest image may be produced.

This new method has caused a revolution in the practice of observational astronomy, by which the skilled observer has been removed from the eye-piece of the telescope, and his place adequately filled by a photographic plate. Unfortunately this elimination of the observer is by no means complete; the telescope has to be persistently watched during the whole of these long exposures, for as yet by no system of control can a driving clock maintain a star fixed upon the same spot on the plate during an exposure of even one hour.

The removal of the observer one step from the duty of making laborious seriatim observations at the eye-piece is a matter for congratulation, as several causes of error are thereby annihilated. These errors may be divided into two classes—large ones, which are accidental, and may be impossible of detection; and minor ones, due to the nature of the observation, to fatigue of the observer, and to personal equation.

Errors caused by unsteadiness of the atmosphere are sometimes accentuated by long exposure of the negative, and it is probably owing to this defect that so far no successful planetary photographs have been made. Photographs are liable to their own peculiar defects, which are due to the "spreading" of star discs on the plate, and to the unequal expansion and contraction of the film during the various processes of development.

The fact must also always be borne in mind that photographic action is set up by the more refrangible rays of the spectrum, so that unless a star happens to emit light nearly equally compounded of luminous and chemical rays, the photographic and visual images must differ in intensity. From this cause the well-known form of a constellation may be unrecognisable where a conspicuous reddish star, such as Aldebaran, fails to make an impression at all commensurate with its visual lustre.

The fact that every one of perhaps 10,000 objects seen upon a particular plate has been simultaneously impressed thereon is obviously of great importance. A further advantage is that the plate becomes a permanent record, and available for future reference, not only by the astronomer who superintends its production, but also by others who, in the comfortable temperature and seclusion of the study, can carry on the work free from the strain and exposure involved by the use of such ponderous yet delicate machines as the instruments now required for astronomical discovery.

The total number of mammoth telescopes in the world may be counted on the fingers of both hands. Bearing in mind the fact that their powers are equal to the perception of millions of celestial objects beyond the light grasp of minor instruments, the insufficiency of the slow methods of eye-observation of measurement, when contrasted with the rapidity and accuracy of the new method, is apparent.

Owing to the scarcity of fine observing nights, and to the interference of optical performance by the lights, smoke, and perturbed atmosphere of cities,* a few of these large instruments have been placed on serener elevations with the most gratifying consequences. The possibility of investigations being completed apart from the telescope will doubtless ensure a more frequent resort to this practice in the future.

---

* The glare of lucigen lamps used on the railway at a distance of over two miles from Dr. Roberts' Observatory at Maghull, quite prevented work being done in their direction while they were burning.

The respects in which the photographic method differs from the old mode of observation, with its advantages and defects, must now be considered. In eye-observation, the whole of the light-gathering power of the telescope is by means of the eye-piece projected through the lens of the eye upon the nerves of the retina, producing through the brain all the wonderful sensations of light and color. With care the eye can be trained to extreme sensibility to feeble rays; but once having received an adequate impression, by no further persistency of gazing can a greater effect be obtained than that received during the first few seconds.

But by the photographic method, if a ray of light impinging upon the sensitized plate is capable of inducing the slightest amount of chemical action, the continued exposure of that plate to the light intensifies the effect produced, and causes an image to be piled up till it leaves a mark which, after development, is visible to the eye.

It is obvious that (this power having been proved) in order to obtain the image of faint objects, prolonged exposure alone is necessary, and this prolongation of exposure has been carried out to such an extent that the same region of the heavens has been photographed on two, or even three different nights, with a total exposure on the same plate of twelve or thirteen hours, and by this means stars of one to two magnitudes lower than it would be possible to discern visually, in the same instrument, have been automatically recorded on the sensitive plates.

Those who have not examined stellar negatives must remember that the best positive prints show only a small proportion of the stars visible on the original plate—one magnitude is lost in the best prints, and two are lost in inferior copies.

Again, the angle of distinct vision to the human eye is decidedly limited—this is easily shown by fixing attention upon a single prominent object in a landscape, and, without permitting the eye to deviate from it, endeavouring to see how many adjacent parts can be described, from which it will be found that the angular value of distant vision is so small that our ideas of a landscape can only be acquired through the continual roving of the eye all over it.

Apart from this, however, assuming that the eye could perceive simultaneously every object clearly in the field of a telescope, it might be useful for general description; but for exact measurement, one object after another, or at most two together, must be submitted to the scrutiny of the micrometer, and this process must unavoidably be slow and tiring.

The photographic plate, on the other hand, records upon a surface covering several square degrees of the heavens every object within the power of the telescope visible in that space, of its true actinic value and its true relative position. Such plates may contain from 10,000 to 50,000 stars, and form an accurate chart of the heavens at a certain fixed period of time, and are of use for future reference and discussion.

The increased value to science of the costly instruments with which research is now conducted is manifest when it is considered that telescopic study can only be pursued during favourable weather, and the value of a process which not only enlarges the optical power of any given instrument, but also multiplies a thousand fold its rate of production, entitles the methods of the astronomy of the future to our highest consideration.

A further drawback to ocular vision is found when a comparison is made of the best drawings, which have taken years of valuable work to produce, of the faint extended forms of nebulæ, with the photographic results obtained in a few hours.

In viewing these trying objects, the eye fixes upon the brightest or darkest spots, where most contrast is perceptible, to the undue strengthening of certain features, and to the total neglect of others. The negative is devoid of both nerves and sentiment, and produces a record dependent solely upon the uniform sensitiveness of the film and the actinic value of each ray, giving to the result an absolute freedom from bias. The sensibility of the eye is also seriously impaired by the necessity of having some light by which to record what is seen, even when the utmost care is taken to shade direct rays from the pupil.

In consequence of the progressive action of light upon the film, the impressed images of stars vary with the exposure. No precise formula has yet been arrived at which will express the relation which the diameter of a star exposed for a given interval of time bears to the diameter of the same star for a different interval, authorities like Bond, Pritchard, Charlier, Christie, etc., being considerably divergent in their results. Mr. Christie * has recently, from the discussion of over 2,000 measures of 150 stars, made by three observers at Greenwich, given the following expression, which cannot be far from the truth, viz.:—the square root of the diameter increases as the logarithm of the exposure, or as an equation—

$$\sqrt{d} - \sqrt{d_0} = 1{\cdot}03\ (\log t - \log t_0),$$

when d, d_0, are diameters of the image of the same star in

---

* "Monthly Notices," *Royal Astronomical Society*, lii, p. 125.

seconds of arc, with exposures of t seconds and t_0 seconds of time respectively, with the same instrument, and under equal atmospheric conditions.

This empirical formula will explain the appearance on the negatives of star discs of considerable magnitude, and the enormous development of 1st and 2nd magnitude stars with long exposures, owing to which their images may obliterate dozens of minute stars in their vicinity, constituting, perhaps, the gravest defect which can be alleged against astro-photography. There is at present no remedy for it on plates where, from use of short-focus objectives, the stars are crowded in thousands in the space of a few inches.

For those parts of the sky where bright stars of the three highest magnitudes have to be charted, long-focus telescopes will be advantageous, so that by the use of a larger scale for the map the faint stars may be removed further from the bright one, while its image will remain practically of the same dimensions.

Another important point is a consideration of the effect of aperture and focal length upon the delineation of objects having extension, such as comets and nebulæ, as distinguished from stars, the discs of which are spurious and, theoretically, have no dimension. By an elementary law of optics, the brilliancy of the image of a distant object, when viewed through any telescope, varies directly as the square of the aperture of the object glass, and X inversely as the square of the focus. focal length

Owing to this, the photographs of nebulæ by very large telescopes of long focus do not show anything like the extension given in those photographs taken by some much smaller instruments. The reason for this is evident by inspection of the table annexed, showing the relative light values of several of these large telescopes :—

	Aperture.	Focus.	Ratio = square of focal length divided by aperture.
Henry Bros.	13	130	100·0
Common	36	196	29·2
Common	61	343	31·5
Lick	36	672	415·0*
Roberts	20	100	25·0

The light value in the last column is the square of the quotient obtained by dividing the focal length by the diameter of the aperture. The highest place is occupied by Dr. Roberts' 20-inch reflector, and this, no doubt, is one among other reasons for the pre-eminence attained by him in this work.

The list above referred to includes only large instruments, the light value of wide-angle short-focus lenses used for mapping large regions of the sky is much higher.

Though the application of photography to the delineation of the moon has always been successful, very distinct progress has been made recently, as a comparison of photographs † taken in 1854, at Liverpool, by Hartnup and Forrest; in 1866 by the Melbourne 4-foot reflector; and those of recent date at Mount Hamilton and Sydney will show. Till within the last year or two, when promising results have been obtained by Dr. Common and the Lick observers, both of Jupiter and Saturn, the planets have resisted all attempts to obtain passable photographs.

It is in the domain of stellar photography that the most interesting and important work has been accomplished. In 1866, Dr. Gould, of Cordoba, Argentine Republic, photographed the Pleiades, and measured the distances between the stars, and having compared the result with the elaborate investigation of those distances made by Bessel in 1840, proved—firstly, that no change of any moment had occurred; and, secondly, that the new method of measurement was an unqualified success.

---

* For photographic purposes the aperture of the Lick telescope is 33 inches only.

† These and other photographs specially referred to were exhibited on the screen.

Messrs. Henry and Roberts, in 1883–4, showed by their work that photography was capable of rendering clearly defined small star discs with long exposure, and their results, combined with Dr. Gill's work at the Cape of Good Hope Observatory in the preceding year, originated undoubtedly the conception of the Astro-photographic Congress which assembled at Paris under the presidency of the late Admiral Mouchez in April, 1887, at which 56 eminent astronomers from all parts were engaged; the outcome being that at eighteen observatories in latitudes ranging from Helsingfors to Melbourne, with telescopes of 13 inches aperture, specially constructed for this work, an average number at each observatory of about 1,200 negatives will be taken to complete a celestial survey in which all stars down to the 14th magnitude will be comprised—truly a *magnum opus* well worthy the closing decade of this progressive century!

The ease with which stellar maps can be produced incidentally led at once to their being utilized for discovery in other directions, the first conspicuous example being the re-discovery of the lost asteroid Sappho, by Dr. Roberts, by the trace of its orbital movement among the fixed stars, on a plate exposed for one hour; the planet was distinguished at the first trial in such a crowded stellar region that the ordinary method of search might have proved futile for several years. Many other minor planets have been followed in the same way, but not till December, 1891, did Dr. Wolf, of Heidelberg, discover the first new one (No. 323) by this method.

The change made by photography will be perceived when, of 34 minor planets discovered during the year 1893, all but one are to be credited to the new method.

A series of trials for the purpose of testing a cometary theory of Professor Forbes, as to the existence of a planet beyond Neptune, has been made with great care by Dr. Roberts, but led only to a negative result.

The first discovery of a comet by photography was made by Mr. Barnard, at Mount Hamilton, in October, 1892. This comet was only of thirteenth magnitude, yet it left a trail upon a plate exposed for four hours, and through this was picked up on the following day with a twelve-inch equatorial.

It may appear to be somewhat remarkable that this is the first instance of a comet being glimpsed by photography, but it shows with what assiduity the skies are "swept" by those who devote themselves to this pursuit. The rapid changes which are going on in the substance of comets are well portrayed by photography, and changes that could not be detected by the eye have on more than one occasion been recorded.

A conclusive proof of the minute accuracy of which stellar photography is capable is furnished by its application to the determination of stellar parallax. Professor Pritchard, late director of University College Observatory, Oxford, showed by measures made upon a large number of negatives of $61^{1 \text{ and } 2}$ Cygni, Polaris, and of several stars in Cassiopeia, that this method, while fairly successful from the first trials, gives promise of being of the utmost value in the immediate future. The fact that a large number of surrounding stars may be utilized for position-measures, instead of only one or two stars as formerly, will enable the greatest reliance to be placed upon the results obtained.

Photographs taken of small areas in various parts of the heavens have confirmed the investigations of Sir William Herschel, who was the first to estimate the relative richness of scattered "fields" by star gauging. [*To illustrate this, comparative plates were exhibited of equal sky areas, one taken in Ursa Major, and the other in a rich part of Cygnus, the former showing a few hundred stars only, the latter about twenty thousand stars, the length of time of exposure being in each case three hours.*]

The peculiar fitness of photography to deal with faint irregular forms of nebulæ has already been referred to, and in no branch of this subject have such splendid results rewarded the observer.

By the use of instruments inferior in size, many of the elaborate drawings made by Rosse, Lassell, Bond, Secchi, and others, of these difficult objects, have been verified, while in some cases the tendency of eye observation to exaggerate certain distinctive features has been exemplified. With regard to some of these objects our ideas have been completely transformed.

The great Orion nebula (42 M.) has perhaps been most often photographed. A very good plate was secured by Draper as early as 1880, and a negative, which proved the real efficiency of photography for this work, by Dr. Common in 1883. Since then many different observers have added to our knowledge of its vast dimensions, but there is probably much yet to be learned by longer exposures or by the use of more sensitive films, as, so far, increase of exposure has always added to our knowledge of it.

In 1884, Messrs. Henry Brothers proved the existence of nebulosity in the Pleiades (altogether apart from the known large faint nebula surrounding Merope), with their 13-inch object glass. Symptoms had been previously visually perceived with the 27-inch Vienna telescope, and by Dr. Common's 36-inch reflector. This was quickly followed, and greatly excelled, by Dr. Roberts, who showed the whole cluster to be filled with nebulous matter, disposed in the most extraordinary forms.

One other illustration must suffice for this part of the subject.

The first nebula discovered in the sky was 31 M. Andromedæ; it is visible to the unaided eye, and has been viewed and drawn almost *ad nauseam.* With all the telescopic power of the world, it defied analysis, and was considered the most conspicuous example of an amorphous irresolvable mass, but to the irrepressible reflector of Dr. Roberts belongs the honour of having "wrested from it the secret of its evolution, and given ocular corroboration to the splendid guesses of Laplace and Kant." *

Another branch of the subject now claims attention.

Since Bunsen and Kirchoff's magnificent generalization in 1859, by which the identity of terrestrial elements with those of the sun and stars was proved, the progress of this branch of physical astronomy has been most triumphant. It will be our duty to show how efficient an aid photography has shown itself to be in this department. A very considerable part of the discovery accomplished by spectrum analysis in the domain of astronomy is due to the assistance of photography. This remark applies not so much to solar investigation as to stellar, for it is in the study of the dispersed light of these faint objects that little could be achieved with the eye alone.

Our sun is the effulgent representative of all the stellar host, and the study of his surface has been carried on with the utmost assiduity, and the knowledge obtained from measures and photographs of his spots, prominences, and corona have been of essential service in the study of the constitution of a few of the millions of his compeers.

---

* Principal Rendall, July, 1890, Address at Liverpool Town Hall.

Records of the rapid changes upon his surface and environment, especially those taken during the rare and brief moments of solar eclipse, are immensely indebted to photography. Proof has thus been incontestably afforded of the nature of sun spot outbursts, of the red prominences projected to 100,000 miles beyond his surface, and, to a slighter extent, of the changes of form of the corona.

In order to arrive at this knowledge the completest maps of the sun's spectrum are required, and the labours of Angstrom, Thollon, and others, who worked indefatigably at the visual spectrum, may be considered to be eclipsed by Abney, Maclean, and Higgs, whose photographs abound in details that cannot be otherwise represented; besides this, the great value of spectro-photography is in the circumstance that it accomplishes a vast quantity of work simultaneously, and so affords the means of discovery of changes that could not by other methods be perceived. Mr. Hale, the Director of Kenwood Observatory, Chicago, has made photographing the forms and the spectra of solar prominences his special line. He uses, like Mr. Higgs and other observers, a 4 inch Rowland grating, ruled with 14,438 lines to the inch, with large collimator and telescope, applied to a 12 inch equatorial. In April, 1891, he obtained the first photograph of the spectrum of a prominence without the sun being eclipsed; six or seven lines are generally observed in the ultra violet, and of these five belong unmistakably to the series of hydrogen lines discovered by Huggins in the Sirian stars. Mr. Hale and Professor Young have both obtained reversal of the H and K lines of these spectra.

M. Deslandres, who slightly preceded Mr. Hale in this work, has also, without eclipses, obtained photographic evidence of the displacement of chromospheric lines during solar storms; also photographs of the forms of these eruptions.

Photo-spectrographic stellar surveys have been made by Pickering, Vogel, Konkoly, and others, and the classification of stars into four types, much as visually was perceived by Secchi and Huggins, is confirmed. Out of 6,000 examined by Vogel, 5,200 belonged to the first two types of stars, viz., Sirian and Solar. While Professor Pickering, of Harvard (Henry Draper Memorial), has similarly photographed the spectra of 15,700 stars, and discussed them all in the space of a few months.

When we consider the recent birth of this science, remembering that the first stellar spectra of Sirius and Capella were photographed in 1863 by Huggins and Miller, that no lines were visible, and that it was not till 1876 that the same eminent astronomers photographed Vega's spectrum with seven lines, and that now hundreds of lines are photographed in numbers of these brighter stars, we see how rapid advance has been.

Of this work in 1887 the late Professor Pritchard prophetically wrote:—

> "There is prefigured nothing short of an entire revolution in the application of instrumental methods to astronomical research. The superb instruments now existing, monuments as they are and ever must be of the genius of a long line of highly gifted men, will not indeed be wholly superseded, but will be mainly valuable as instruments of verification of labours and results obtained not in painful driblets, but in groups and masses by shorter processes. Astronomers' attention will, in the near future, not be confined to the direct scrutiny of the heavens alone, but to the study of the faithful pictures thereof, taken at will in rapidly occurring successive periods. The consideration of these pictorial views will take the place of laborious catalogues. Potentially they will be such in themselves."

The determination of radial motion or movement of a luminous body directly in the line of vision is one of the most interesting of spectroscopic studies, because such movement can by this means be measured when, from its nature, it would be impossible of perception in any other way. At first the attempts to determine radial motion led to extremely vague results, an error of five to ten miles per second in either direction being frequent, but by continual improvement in the rigidity of the spectro-telescope, and especially from the use of photography to record the observations, the average error has been reduced to one mile per second.

This satisfactory result, equal in accuracy to the best determinations of motion as perceived in the ordinary way athwart the line of vision, has been recently attained by Professor H. C. Vogel, at Potsdam,* who, from 170 photographs of the movements of fifty different stars obtains an average rate of approach or recession of 10·6 miles per second; six stars having less velocity than two miles, and five greater than twenty miles per second. Aldebaran, found to be receding from our system at the rate of thirty miles per second, is in the most rapid movement so far of any detected by this method.

This vast improvement in accuracy is due not only to the use of rigid apparatus and sensitive plates, but also greatly to the fact that the inherent difficulties of visual measurement of the slight variation of wave length caused by such motion can be overcome by photography. These difficulties are chiefly owing to tube currents or to atmospheric disturbance; under which it is almost impossible to keep the images of stars upon the narrow slit of the spectroscope, an aperture not more than one-hundreth of an inch in width only being permissible to secure the finest definition of the absorption lines. Photography also has made it possible to show the existence of very close binary stars, with extremely short periods of revolution, of which β Aurigæ is the most notable instance.

---

* "Monthly Notices," *Royal Astronomical Society*, vol. lii, p. 87.

These two stars revolve about their common centre of gravity in the short space of four days, and must be apparently so close together, 0″.004, that they could not be optically divided with any less aperture than an object glass or speculum of about 90 feet in diameter. A proof, than which there is none more convincing, of the immense value of the spectroscope as an instrument of research.

To conclude with another quotation from the late Professor Pritchard, of whom it would be hard to say whether he was the more distinguished for his ardour in the pursuit of science or his eloquent exposition of its triumphs:—

> "On taking a general survey of the foregoing records of the potency and astonishing progress of this new application of a recent art, placing the whole starry heavens as a picture in our hands, one's thoughts irresistibly turn to the existence of considerable groups and sections of learned men who persuade themselves that astronomy, as a science, culminated in the researches of Lagrange and Laplace, and, as an art was worn out in the hands of Bessel and the Herschels. It has been still further affirmed that, amidst the modern developments and activities of other branches of knowledge astronomy, whether as a science or an art, has ceased to possess human interest. An unprejudiced perusal of the above and similar records is sufficient to indicate the utter unreasonableness of the latter thought. It would be far nearer the truth to affirm that at the present hour, both as an art and a science, astronomy possesses the elasticity and the hopeful enterprise of robust youth. It would be a still securer belief to rest assured that as long as the human mind retains its experience of the past and its incentives to curiosity in respect of the future, no true art can ever culminate, and no true science can become effete."

THE PLACE OF REALISM IN ART.

By ROBERT FREDERICK GREEN.

An enquiry of this kind, even though the subject is an every-day one, had better not be undertaken without a preliminary attempt to define the terms involved in it. The fact that everyone knows what art is, need not deter one from attempting its definition, particularly as, as we shall see, the popular idea of it is not very clear nor satisfactory. There is apparently a very wide difference of opinion as to what is really meant by the word. That, written alone, it has come to mean something more than when used in connection with a special subject, is evident. We speak of the art of book-keeping, of weaving, of advertising even, but we do not thereby commit ourselves to calling the book-keeper, or weaver, or advertiser, an artist. Weaving is an art, but it is not art, there is the difference, but what the difference is is perhaps not very easy to explain. And, unfortunately, artists themselves give us very little direct help. Theirs is a class of mind which seems to recoil from definitions as eminently uncompromising and practical. They can, and do, offer us examples of art in every method of its expression. They discuss its limits eloquently, and its effects with enthusiasm, but they seldom if ever care to enquire what its various expressions have in common. Now, that the task of defining art is a poor one, compared with that of illustrating it, may be readily admitted, but it is a necessary one for all that, if ordinary folk are to be educated into an intelligent opinion of their own, and not be confused by the quarrels and recriminations of rival schools. For we have rival schools in all the arts—in painting, poetry, and literature, and if they are all—as they all claim to be—schools of art, it is really not very easy to see in what they *do* agree. And apart from its advantage in this connection, the general desirability of defining one's terms is in some need of emphasis. We are far too often content to assume that our opponent in an argument knows what we are talking about, and the assumption is certainly not always justified by experience. The most logical of us is apt, perhaps, to look upon words as figures, having an admitted and definite value, whereas they are rather algebraic signs—unknown quantities, of which the value should be carefully worked out. It is sometimes only at the end of a long argument that we find we have been mistaking difference of meaning for difference of opinion, and that we have never really disagreed about the real question at issue.

To begin, then, at the beginning—etymologically. The word Art, as everyone knows, is a Latin one, and has come into our language, like most Latin words, from the French. Its original translation is *skill*—acquired manual dexterity,—and no matter in what sense, good or bad, the word is used, no matter how its significance has been widened in this connection or narrowed in that, this original meaning clings to it. Essentially, art is skill, and the idea of work skilfully done can never be separated from it. "You may judge of my mastership of craft," says Giotto, "by seeing that I can draw a circle unerringly," and, as Ruskin tells us, we may safely believe him, understanding him to mean that, though more may be necessary to an artist than such a power, at least this power is necessary. John Stuart Mill, therefore, has history, if not the Royal Academy, on his side, when he defines art as "the endeavour after perfection in execution." This is perhaps the most elementary definition, having the authority of a great name, that we shall be able to find, and it is one of which a very slight examination will show the insufficiency. If mere perfection in execution were the aim, a geometrical figure would take a high place as a work of art, and Michael Angelo's sculptures, some of which are said to show traces of careless cutting, would be nowhere. Mill's etymological definition is greatly improved by Matthew Arnold, who rightly demands for art some personal expression. He says, "We mean by art, not merely an aim to please, but also a law of pure and faultless workmanship." The objection to this definition is that pleasure is derived from low and ignoble as well as from pure sources, so that an aim to please may be a mere pandering to wickedness. The idea of pure and faultless workmanship would, moreover, elevate the accurate copy of some great work to a pinnacle of art quite as high as the original. We pass on, therefore, to another, and, so to speak, higher class of definitions, important not only with regard to their authoritativeness, but as being the latest offered for general acceptance. In his *Juventus Mundi*, Mr. Gladstone says, "by the term art, I understand the production of beauty in material forms palpable, whether associated with industrial purposes or not." Here, then, a new element, beauty, makes its appearance, and at once becomes of primary importance, swallowing up, like Aaron's rod, its would-be rivals—skill and pleasure. Sir Frederick Leighton spoke to the same effect in his presidential address at the Art Congress in Liverpool, in 1888. He laid it down that "a work is a work of art only on condition that—is a work of art exactly in proportion as—it contains within itself the precious spark from the Promethean rod, the divine germ of living beauty." It may fairly be argued, with respect both to Gladstone's definition and Leighton's apology, that beauty must necessarily give pleasure. That is so, and it will induce, moreover, only such pleasure as is elevating and ennobling. But beauty does not necessarily involve skill in its production. A photograph, of which accurate copies may be taken *ad libitum*, may produce beauty of a high order, yet one will hardly admit the right of such copies to a front place among works of art. If the idea of beauty, involving skill in its production and pleasure by its expression, were sufficient, we could not have a better nor more complete definition than that by Dr. Murray, in the new English Dictionary: "Art is the skilful production of beauty in visible forms." But even this is insufficient. There is obviously something wanting to satisfy both the popular idea and the artist's conceptian of his vocation. That he must be skilful, all, even practical logicians like Mill, agree; that he must produce beautiful things, artist and critic are agreed, too. "Every good piece of art," says Ruskin, "involves first, essentially, the evidence of human skill, and the formation of an actually beautiful thing by it." What else is necessary? Why is not the accurate copy of a great master recognised as a great work of art? It is certainly skilful. It is, in some respects, more beautiful than the original, since the colours are brighter and the work has not been defaced by time; yet nobody applies Dr. Murray's definition to the copy, and claims immortality for the copyist. The one thing lacking seems to have passed the understanding of all but a few of the most careful thinkers, of all but that small class who, though aided by the highest culture, are never carried away by enthusiasm; who have trained themselves into a dispassionate examination even of their own convictions.

Emerson hits the mark, I think, when he says, "In art, not imitation but creation is the aim." This, we can see is the truly essential element. Creation, originality. Skill is—must always be—dependent upon local circumstance and surroundings; upon age, education, implements. Beauty may be a mere opinion, and its appreciation a matter of custom or fashion. The one thing we have always, in every age and country, the right to demand from art is that it shall convey to us new ideas; that it shall show us something beyond a man's training or his æsthetic faculty; that it shall be the expression of his mind; and this is what justifies Ruskin in claiming teaching as art's highest vocation. Of course, Emerson is not the only teacher who has stated this essential qualification. Most great writers imply it at least, and take for granted its necessity. Leighton speaks of "the fundamental identity of all manifestations of the artistic, creative impulse, through whatever channels it may express itself," and Professor Moncure Conway, writing for a popular audience, amplifies the same idea: "The artist is not satisfied merely with attempting to copy what he sees. The study of nature fills his mind with thoughts of beauty; he conceives persons and scenes which he has never beheld, and the impulse arises in him to give visible form to such conceptions. Works produced in this spirit are new creations, and take rank as the highest form of art."

So that we shall find it necessary to amend, or rather combine, the various definitions of art offered by different critics, admitting the attributes they claim as essential, but putting them in due order, and not—since we are not, as they are, secure in right practice—taking principles for granted. Such a phrase as "the skilful production of new forms of beauty;" or, adopting Mr. Gladstone's phraseology, "the skilful production of new beauty in material form palpable," would seem to embody all that is claimed; assuming, as we may fairly do, the evolution of a pure pleasure not only in the production of beauty but as an effect produced by it. At any rate this definition must suffice as a working hypothesis until we can practically test its accuracy, and we proceed now to do this by applying it to works of unquestioned supremacy in various branches of art.

To music its application is perhaps most easy. The creative power displayed in a great symphony like the "Jupiter"—its wealth of imagery and imagination—the pleasure it produces: a pleasure appealing to ears almost untutored, and promising limitless intensity to the cultured appreciation—the skill displayed in its arrangement, in the perfect harmony of strings, reeds and trumpets—all these are self-evident. Our definition of art will surely apply to music. In painting, and the kindred arts of drawing and engraving, the technical skill assumes even greater prominence, though it is still clearly subservient to the creative force, to the idea it expresses. This is shown by the carelessness with which we regard "still life" and flower studies, even though well executed. Engravings, which demand perhaps higher technical skill than any branch of drawing, never, unless, indeed, they are originals, take high rank among great works of art, simply because they are translations, and can bring us but few new ideas. The enormous difference, however, between true art and mere workmanship is perhaps most clearly shown in portrait painting. Mr. Smith, a local artist, is commissioned to paint the portrait of the mayor of the newly incorporated borough, Freshville. He does so, most carefully, and the likeness, robes, and civic regalia are much admired locally. Has he produced a work of art? We shall see; for it is easy to judge by comparison. His picture is sent up to the Royal Academy, and Freshville being the last new town, or its mayor having some influence with the hanging committee, or for some other reason, the picture gets in. In the same room, on the same wall, perhaps, there is another portrait by Millais, so that one may compare or rather contrast the two at one's leisure. What is it that fixes our attention on the lady in the black dress standing so easily with her back towards us, and looking at us so naturally over her shoulder? Why does she look so sadly? What is she thinking of?—There is a whole history in her glance that we would try and discover, and so we pass our old friend the new mayor, with a smile, and we go again to look at the portrait of a lady, whose name perhaps is all we can ever learn about her, but whose identity is stamped upon our minds for ever. This is no unusual experience, one may have it any year in our own Art Gallery. Titian's "Francis" or Da Vinci's "Mona Lisa" are no doubt truthful portraits, but who cares now? The originals are gone. Their bodily presence faded from men's memories in a very few years, and yet they live to day in sober truth for all the world to see. Art has made them immortal. With regard to sculpture, much the same may be said as of painting. Statues of local or national celebrities, however truthful as portraits, however interesting from a patriotic or historical point of view, never take rank with the creations of great sculptors. They are clever carvings, and when they succeed in calling to our minds the person they represent, their main purpose is served. They are hardly known, the best of them, except in connection with the building or place they decorate. On the other hand, great work in this department of art—work untrammelled by exigencies of pose or fashion, rapidly attains world wide celebrity. Take, for example, a comparatively new piece: Leighton's "Athlete and Python"; the execution is admitted to be perfect—the beauty of form and pose cannot be questioned, and here, moreover, we see clearly evidence of the creative force; the embodiment of a new idea in the defeat of the reptile, its enormous strength misapplied and futile against the trained though weaker muscles of its intended prey. Notice what a different idea the *Laocoon*, a similar subject, gives us. There we see great human strength misapplied, wasting itself in vain and useless struggles, and incapable by fear of any purposeful exercise. But even such masterpieces as these cannot, according to Alma Tadema, be mentioned in the same breath as the Milo statue, or the frieze sculpture of the Parthenon. There a new beauty is shown to us, the like of which we shall never see on this side of the grave, for our worried life is fatal to such calmness, and it is, as Emerson says, "the art of sculpture is long ago perished."

The originality embodied in the greatest architectural works of art is, of course, of an entirely different kind. It is that of form, and mere beauty of form, unassociated with familiar objects, appeals to us perhaps less directly than in the other expressions of it we have been considering. The ideas aroused in our minds by the contemplation of a great building are more vague, less personal, than those produced by music or a statue, but the effect upon us is none the less real. Who, for instance, could see Salisbury Cathedral for the first time, and not stop in wondering admiration? And who, standing on Montmartre, and looking at the many domed city below, would hesitate in pointing out the Pantheon as the greatest and grandest? Wren resigned his post as architect of St. Paul's when the building committee insisted on altering his design, though it was only to a trifling extent. He left his greatest work, his life's work, practically unfinished, because he was not allowed to carry out his idea. What his idea was, I do not know. I am not competent to discover, but we may be sure it is there, built up with the pillars of his beautiful portico, and in the timbers of the great dome, and is plain enough, no doubt, if one could only see to read.

In rhetoric, which may claim justly to be reckoned among the fine arts, does not skill count for something? The arrangement of a great speech, the introduction, the argument, and the peroration! each given the time necessary to produce its full effect, and yet each fitting into each so perfectly that the whole seems one natural, unstudied burst of eloquence. Then the beauty of the language, the well-chosen epithets, the apposite allusions and correct similes! We all recognise the beauty of these. And lastly, the originality! Who has not heard the cheer at a political meeting when the whole building seizes upon the new point made by a great speaker, and accepts it as a settlement of the case. And, finally, in this connection, we come to poetic and literary art. Is technical skill only essential here? Then would French verse take precedence, and the eccentricities of *pantoum*, *ballade*, and *rondeau* demand the highest admiration. Are elegant language, perfect cadence, and studiously correct rhyme the sole desiderata? Then Macaulay's *Lays* and Scott's verses would offer us something like the ideal. The greatest poems of the world are contemptuous of such restrictions. The blank verse of Milton is not beautiful in mere sound or cadence, like rhyme would be. Browning's style and language are at least involved, his detractors would say obscure; and *Don Juan* is flat doggerel. Yet no one would hesitate to place *Paradise*

Lost, *The Ring and the Book*, and Byron's graceless epic on the topmost pinnacle of art. In the drama, Shakespeare is said to have offended every rule laid down by critics as inviolable. Ben Jonson is his master in the art of making plays. Marlowe and Massenger both surpass him in tragic power and force of language, while in pure pathos he must yield to Dekker and Otway. And yet his supremacy is so complete that it has made us neglect every one of his great contemporaries. In fiction, *Tom Jones*, *Wilhelm Meister*, and *Vanity Fair* are not marvels of skill in plot weaving. *The Moonstone* leaves all of them far behind in this respect. Still less do they occupy themselves with beautiful descriptions of scenes or places. Their greatness is shown in their treatment of that most difficult of all subjects, human life and character. Only great artists like Fielding, and Göthe, and Thackeray have succeeded in showing us men and women who, while always natural, are never ordinary; who live and move and act as we do, and yet whose every action is a new experience for us.

The rapid glance we have taken at some of the principal methods by which art finds expression may suffice to assure us that our preliminary definition of the word is not altogether at fault—is, in fact, a serviceable one. Mathematically complete it cannot hope to be; it contains doubtful quantities in the terms *new* and *beauty*, either of which would justify a paper for its sole consideration; but "'tis enough, 'twill serve," and we proceed therefore to the second term involved in our enquiry.

Realism in art may be defined as the aim to portray facts and objects as they really are; in contradistinction to idealism, which aims at portraying the effect they produce on the artist's mind. In realism the most prominent fact or object is the most important, and is so recorded, without reference to its utility or beauty; in idealism, the most important fact or object is sought for, and is made the most prominent, either by enhancing its effect in some way, or by the removal of circumstances which tend to obscure it. The realist records and tabulates; the idealist notes and explains. The realist tells us what things are; the idealist, what they mean. He is the realist who passes through the forest counting and measuring the trees. He is the idealist who points out to us the beauty of the moss-covered stone; who guides us where the stream is flowing so quietly by its banks of fern; and bids us stop to listen to the soft cry of the wood pigeon. It is realism, in a word, which states; it is idealism which teaches. And it would seem, at first sight, as if the two were mutually exclusive. With which of them the highest art is identified, there need be no doubt. Every thinker claims for art the office of interpreter. Coleridge calls it "the mediatress between, and reconciler of, nature and man." "It is therefore," he says, "the power of humanising nature, of infusing the thoughts and passions of man into everything which is the object of his contemplation. Colour, form, motion, sound, are the elements which it combines, and it stamps them into unity in the mould of a moral idea." "The virtue of art," says Emerson, "lies in detachment—in sequestering one object from the embarrassing variety. Until one thing comes out from the connection of things there can be enjoyment, contemplation, but no thought." And this is why art always must demand beauty. The subject chosen for expression shall not be mean or indifferent in itself, and once chosen, the artist's vocation is to render its effect more and more pleasing, eliminating all the detracting elements, and enhancing, by every means at his command, those which at first attracted him.

"Nature, exactly, simply, barely nature," says Byron, "will make no great artist of any kind." And that this idealising process has really been effected in all great works of art, a very few examples will suffice to prove. Take a modern painting for example, Luke Filde's "Doctor," which will be familiar to all of us. How entirely subordinated are all the other figures to that of the doctor! How prominent is the one main idea—that of true pity! If such a scene were real, probably the mother, in her agony of despair, would distract our attention, even from her dying child; the ideas of grief and pain and despair would impress themselves upon us, and we should probably hardly notice the doctor, taking his presence for granted, and should fail altogether to realise, as an artist has done for us, the noblest emotion of all.

Giotto, in his wonderful frescoes in the chapel of the Arena at Padua, has succeeded in eliminating from the human face and figure absolutely every characteristic but the one he intended to convey. The Milo statue shows us an expression of calm serenity such as never sat on mortal face, and the "inscrutable Sphinx" has become a proverb. In literature the same process as in painting is carried on. A subject is chosen, and certain ideas in connection with it made more prominent by their emphasis, or by the elimination of other distracting considerations. It is in this way that we have, in *La dame aux Camelias*, a really beautiful play, produced from what in hands less artistic would be only a vulgar *liaison*. It is in this way that the revolting *motif* of *The Cenci* has been rendered almost tolerable, and it is in this way that Milton has impressed upon Christendom his identification of the serpent in the Garden of Eden. Art, then, is essentially idealistic. It has no place in nature pure and simple, and must therefore always, from the conditions of its existence, be opposed to realism. It may be taken as an axiom that, *ceteris paribus*, as art tends to idealism it becomes nobler and purer, and as it tends to realism, it becomes more degraded. "In many examples of fine Greek art," says Ruskin, "the two conditions of thought, symbolic and realistic, are mingled, and the art helpful in one function, and in the other so deadly, that I think no degradation of the conception of the Deity has ever been quite so base as that implied by the designs of Greek vases in the period of decline."

If then the highest art is pure idealism, how can realism, or anything approaching it, be tolerated, have a place at all? Simply because perfect art, like perfection in everything else, is impossible—is in itself an unattainable ideal. We must work with such materials as we have. The very process of idealisation implies something real to be idealised. To express his idea, the artist must perforce associate it with some object familiar of itself, and carrying with it the same idea to the popular mind. How else can he hope to make his art intelligible? His ideal conception of bodily strength he associates with the real figure of the athlete or the gladiator; courage he symbolises by the lioness fighting for the safety of her cubs; solitude, by the dark forest; and so on throughout the whole realm of nature.

And in its actual expression, art is further determined of course by the condition and surroundings of the artist. He must, as Emerson says, employ the symbols in use in his day or nation to convey his enlarged sense to his fellow men. No man can quite exclude this element of necessity from his labour. No man can quite emancipate himself from his age and country, or produce a model in which the education, the religion, the politics, uses and arts of his time shall have no share. Though he were never so original, never so wilful and fantastic, he cannot wipe out of his work every trace of the thoughts amidst which it grew. The very avoidance betrays the usage he avoids. Above his will, and out of his sight, he is necessitated by the air he breathes, and the idea on which he and his contemporaries live and toil, to share the manner of his times, without knowing what that manner is. So that the greatest art the world has seen, the greatest it can hope to see until we have risen to a perfect sympathy with nature and our fellow men, must be hampered first by the necessity of a realistic starting point, and, further, by the artist's more or less imperfect conception of the idea he seeks to convey.

The enquiry then, with which we set out, has, as often happens, gradually answered itself in the process of our examination. Realism is essential to art, while at the same time essentially degrading it. It is essential because of our very limited capacity to grasp abstract ideas, because we must, to learn anything, be taught by object lessons; and it is degrading since it is opposed to that idealism in which, as we have seen, all true art consists. Always necessary, it must be more prominent, as the artist is uncultured, or if he is to be intelligible to an ignorant audience. The greatest art, therefore, must always be beyond an ordinary popular comprehension, can appeal only to the highest faculties. It is the old story of the man who couldn't see anything in Turner's pictures. "Don't you wish you could?" A prominent member of this Society, a by no means superficial literary student, once remarked that he questioned whether Shakespeare himself fully realised the significance of the thoughts to which he has given utterance. The incapacity of uncultured folk to grasp anything beyond the realistic setting of a work of art is comical in its hopelessness. I remember once lending *Vanity Fair* to an acquaintance. He returned the volume in a few days, and when asked what he thought of it, replied, " Oh! it isn't a bad tale, *but how do you think he spells 'dictionary'?* " One of our local journals noted not long ago the jarring laugh in pit and gallery when an actor showed them the terrible spectacle of a mind, really true and great, overborne by the craving for alcohol. The man had promised his friends not to touch the whiskey, and his self-abasement as he succumbs to the temptation might well have brought tears of pity to every eye. Yet the house saw only in it the joke of a man getting drunk, and laughed and applauded accordingly. The artist, if he be really great, however, will care little for popular appreciation. His work is for the few higher minds, and with their approval he may well be content. The people will follow their leaders sooner or later—in the meantime they do not count.

So that if our enquiry has led us to a just conclusion, we shall find that in the greatest works of art, realism, while employed as the foundation of idealism, is kept strictly within these limits. No more of it is permitted than is necessary for a full expression of the idea, and in every case a wise choice has been made of such a real subject as is of itself well adapted to convey the idea imposed upon it. Of course the question, how strong shall be this realistic framework, how prominent, or how much concealed it shall be, depends both upon the subject and the artist. There can be no hard-and-fast rule, the principle of entire subservience to the idea never being lost sight of. In some great works of art, particularly those embodying some very complex idea; in Holman Hunt's "The flight into Egypt," for example, the realism necessary to bring the story to our minds is greater than that required by Leighton in "The Captive Andromaché," and in portrait painting, the obvious necessity of a true likeness is the reason why only the greatest artists can get beyond this — why so few portraits are works of art. Perhaps Teniers and his school may be cited as among the most realistic of great painters, yet even their homely scenes carry with them one prominent idea, in presence of which the others are kept in entire subjection. Of this school, however, Ruskin and other critics speak in terms of by no means unqualified admiration. Of eminently idealistic painting, Turner's "Rain, Steam, and Speed," is probably the most notable example, and it is difficult to see how idealism can be carried further. Some of the works of the impressionist school, attempting more, are unintelligible. In great sculpture, there is no realism beyond the mere form. The statues of Phideas have attained to that repose which Hazlett describes as "the one striking condition of the ideal. For as it is nothing but the continued approximation of the mind to the great and good, so in the attainment of this object it rejects as much as possible, not only the petty, the mean, the disagreeable, but also the agony and violence of passion, the force of contrast and extravagance of imagination. It is a law unto itself. It relies on its own aspirations after pure enjoyment and lofty contemplations alone — self-moved and self-sustained." "I have never," said Byron, "seen anything at all to approach in sublimity the expression of sculpture either in the Apollo, the Moses, or other of the sterner works of ancient or modern art." In literature, the great epics are so high above our little world and its troubles that we have never regarded their heroes as human beings. Their only touch of realism is an occasional mundane simile, rare as beautiful:

> Thick as autumnal leaves that strew
> The brooks in Vallambrosa.

Or the well-known stanza in the *Inferno*

> There encountered us of souls a train
> Down by the bank, and all as they passed by,
> Looked at us as we look, at eve serene,
> One on the other, when the new moon we spy
> So they peered at us with o'er sharpened brow,
> Like an old tailor at his needle's eye

In the drama, plays such as "The Tempest," "Faust," "Nathan," cannot be acted, at any rate as written, many of them not at all; the realistic effect of the stage and its accessories being fatal; while in lyric poetry, what a gorgeous wealth of imagery can be bestowed upon a simply natural object, all who have read—and who has not?—Shelley's *Cloud* and *Skylark* must know well. Byron, it may be remarked in this connection, has succeeded in investing some of his lady friends with an ideal importance to which their character and conduct would seem by no means to have entitled them. In works of fiction, the process of idealisation is less conspicuous, and is difficult somewhat to illustrate. It is seen best perhaps in such studies as *Daniel Deronda*, where the Jews' expectation is so well shown in Mordecai's patient watchfulness. Waldo, in *The Story of an African Farm*, is another purely ideal character; as is also, though he affects us less pleasantly, *David Grieve*. Very few novels, however, can claim, by any consensus of public opinion, to rank as great works of art; and on the other hand, in this department of literature, has been developed a school which claims to be entirely realistic—to be free from idealism of any kind. Its followers have set themselves the task of recording society as it is or seems to be, around them. The result is so far somewhat unsavoury. Whether the motives that actuate most of us are really so low as Messrs. Zola and Tolstoi would have us believe, or whether it is only that the lower motives are the more prominent, need not be considered, since it seems certain that the realistic novelists have found little of what is good and beautiful in humanity. Their work has, no doubt, present claims upon the attention of social scientists, of historians, of philosophers; it will no doubt furnish themes for the moralist, the historian, the novelist in the future, but unless our reading has been to no purpose, they have more claim to rank with gazetteers than works of art, and need not now concern us. In great music—almost entirely ideal—the realism, when it occurs, is a mere suggestion,—the noise of flies in Handel's "Israel;" the sad moaning of the wind at sea in the "Ocean" symphony, and the galloping horse in the "Lenore," are examples. The estimation in which truly realistic work in this department of art is held may be gauged by the value attaching to "Descriptive Fantasias," "Sparkling Fountains," "Silvery Waves," and compositions of the like ingenious character.

But enough has been said in support of our conclusions, and they had better now be left to the critics. We have seen that art—essentially skilful, beautiful—is also essentially creative; that it puts before us new truths of man and nature, and that it arrives at these truths by its own process of idealisation. That it owns, nevertheless, and glories in its human origin, finding in humanity the symbol of its highest and purest ideal, but that it derives its inspiration from nature, from what is real and tangible to all of us; that, in short, there is and must always be—a place, albeit a secondary one—still a necessary place for realism in art.

ACCOUNT OF THE "FAZAKERLEY COTTAGE HOMES," NEAR LIVERPOOL.

An Experiment for endeavouring to solve the Social Problem of Hereditary Pauperism.

By J. BIRKBECK NEVINS, M.D., Lond.

It is often a cause of surprise that important events may be passing in our midst, and yet be unknown to all but a very small fraction of the community. Such is the case with respect to the important experiment which has been carried on for five years by the West Derby Board of Guardians, the representatives of one of the largest Poor Law Unions in the kingdom, forming an integral portion of the great city of Liverpool. It is an experiment for solving one of the great social problems of the present day—the *limitation* of hereditary pauperism, even though its *absolute prevention* may not be possible; and yet the experiment has probably not been heard of by one in a thousand of the inhabitants of Liverpool. The following paper is intended to describe its objects, its character, and its success, so far as it has at present been carried out.

Origin of the "Cottage Homes."

The West Derby workhouse had become so full from increase of population that additional room had to be provided for the children somewhere, and for a time they were accommodated in the Kirkdale Industrial Schools, by the Liverpool Parish Authorities; who however themselves soon began to feel the want of room. About the same time also the Dominion of Canada began to discountenance the immigration of *Pauper* children. "*The Emigration of the inmates of workhouses, or persons in receipt of parish relief is not encouraged by the Canadian Government,*"* and this being the case a strong desire was felt among influential persons connected with the Union, to try whether the rising generation of workhouse children might not be placed under such improved conditions and training as should fit them to become *worth keeping in this country,* instead of vainly endeavouring to get them provided for in Canada, or elsewhere out of England.

OBJECT OF THE EXPERIMENT.

With the above object in view the "Cottage Homes' were originated to provide in the first instance a Home for the hundreds of Pauper or Orphan children dependent upon the West Derby Union; and secondly, so to bring them up that they might be separated from their original injurious surroundings, and might grow up to be useful and respected, self respecting, and self supporting members of the community, instead of perpetuating an unhonoured and inferior stratum in our midst—the class of Hereditary Paupers—to be a curse to themselves and a burden to others.

METHOD PROPOSED FOR ACCOMPLISHING THESE OBJECTS.

1st. The provision of a Home with bright and healthy surroundings, instead of the inevitably depressing influence of a large workhouse.

2nd. The separation of the children from all association with "Pauperism," either hereditary or acquired, and while still young and amenable to better influences.

---

* "*Official* Handbook of information relating to the Dominion of Canada," 1894, p. 27.

3rd. The training of them so that they may not even in thought be associated with what is criminal or humiliating.

In order to carry out this object the word "Pauper" or "Pauperism" is forbidden in the Homes; and if any child—for example, an orphan whose parents had never received parish relief—should taunt another whose parents had been in the workhouse by calling it "Pauper," the child would at once be punished as for an offence; but so little is "Pauperism" associated in their minds with residence in the Cottage Homes, that it is a condition apparently never thought of amongst them, and I was informed that the rule practically never required enforcement.

On the same principle the children do not wear any style of clothing that could constitute a uniform, and no child met with on the road or in the village or elsewhere could be recognised by its clothing as a workhouse child. The diversity of clothing is infinite, and is managed as follows. The periodical sales by the great Mercers and Drapers, &c. at the close of the season are watched, and the Superintendent's wife is intrusted by the Guardians with powers to purchase at such a cost as she judges right a hundred hats or a hundred garments of various descriptions for the girls, of every shape and character of the out-going season; and coats, or caps, or other garments for the boys; and remnants of cloth of various characters, the clothing from them to be made up by themselves in the workshops in the Homes. As the result a visitor among them feels as if he was simply seeing a large school of hundreds of children clothed according to the fancy of their respective parents, and the girls as seen at church on Sunday present as great a variety of costumes and head coverings as the fashions of the past season supply. One feature and one only was universal among them when I saw them in church, and that was a simple pretty white muslin handkerchief round the neck of each girl, and tied under the chin in two large bows; and this, I was informed, was not a badge of being a "Cottage Child" but was a homage to its being Sunday, and a suitable special decoration for Divine Worship.

The same object is striven after in another manner also. During the *winter* half of the year the children have their lessons in the large hall of the Homes; for it was found that they suffered from the wet feet and wet clothes, sometimes unavoidable from having to go a mile or further to the National School at Fazakerley. But in the *summer* half of the year, the *Protestant* children go to the National School in the village, which is also attended by the children of the neighbouring farmers and small village shopkeepers and labourers, &c., and like them, each child pays its school fee (or did so until the schooling recently became free), which was provided by the Guardians to be handed up with the other children's. They also took their dinners with them like the other children who might come from too great a distance to go home between schools, and they all learnt and played and ate together without any official distinction among them. The *Roman Catholic* children go to "Gill Moss School" in the same neighbourhood, where their fees are (or were), paid by the Guardians as in the case of the National Schools. No doubt it would often be known who they were, and social distinctions would sometimes be observed even among the children; but it is not necessary to go to a National School in an agricultural district to see examples of social distinctions among the pupils of even "High Schools for young ladies."

In order further to teach the children self reliance combined with self restraint they are allowed to go from time to time to the village shops, to spend any halfpence they may become possessed of, having first obtained permission from their Foster *Mother* which is endorsed by the Superintendent; and the permission is so seldom abused that it is continued without hesitation.

Plan Adopted.

An area of about thirty-eight acres was purchased at Fazakerley, a purely agricultural and healthy district, about six miles from Liverpool, and bordering upon the Lancashire and Yorkshire Railway, of sufficient extent to afford room for the necessary buildings, with abundance of air and light, and with land enough to provide not only vegetables for the consumption of the inmates, but also play-grounds for the children, and land under cultivation for teaching them something of farming and gardening, both of them beneficial to health, and useful in an agricultural district.

In this space have been built twenty so-called "cottages," each with ground at the back for play-ground, and some in front for a little grass and flower-bed, and evergreen hedge to separate it from the road. These cottages form two rows of ten ornamental villa-looking, two-storied, red-brick houses, with a broad road, bordered with trees, running between them the whole way; at the entrance of which is an ornamental arched gateway, and a "cottage" for the first reception of new comers, who remain there for a few days on probation, to judge of their health and freedom from infectious diseases. Near the other end of the road, but only partially closing it, is a large building with an ornamental spire, which is a landmark from a distance, and in which on Sundays service is performed twice in the day by a clergyman of the Church of England. A Sunday School is also held in it, many of the teachers being ladies or others resident in the neighbourhood. On week days it is used as the general school-room; and in the evening there is from time to time an entertainment held in it, in which a concert, or some amusing amateur theatrical performance, or a lecture with lime-light illustrations, is given by friends of the Superintendent or Guardians, or by the Kyrle or some other philanthropic society. The Superintendent's house, and a variety of offices and workshops, occupy the rest of the ground devoted to buildings, including a bright and cheerful Infirmary, presided over by a trained nurse, and containing on an average from a dozen to twenty patients; but happily not in frequent use for serious cases, most of them being of a mild, temporary character; and there has been only one death in the Homes since they were opened. There is also a building containing a large tiled and covered swimming bath, which admits of being covered by boards when not in use, and then making a sort of club room for newspaper reading, or chess, etc., for the officers.

Surrounding the above buildings are a portion of garden ground, in which are grown more vegetables than can sometimes be consumed in the Homes, and also several acres laid down in grass and cereals and root crops, for the purpose of teaching the children something of gardening and farming. A field is also rented in the neighbourhood for football, cricket, and other athletic games, when the crops are not upon it.

DESCRIPTION OF INDIVIDUAL "COTTAGES."

These are two-storied brick houses, built upon a uniform plan as regards the ground plan and elevation and general aspect, and they are all really detached "villas" rather than "cottages." The groundfloor of each consists of a "mother's" private room, a store-room, a general play-room, a dining-room, with kitchen, scullery, etc., a lavatory, with six basins supplied with hot and cold water, a bath and a laundry. And the upper floor consists of large dormitories, thoroughly well lighted and ventilated, and furnished with separate beds for each child, and also lockers, in order that the children may learn the lesson of individual cleanliness and tidiness, and of personal possesions, though the "lockers" are *not* locked.

The furniture throughout is plain, modern, inexpensive and excellent, such as would now be met with in any recently furnished middle-class house, where comfort was attainable, but thought and economy were still ruling principles. The children have to do everything for themselves in their dormitories, and thus learn care, and attain skill as housemaids; and in every house that I visited, without previous notice, and I saw all that I asked to see, the floors, bedding, and crockery were models of cleanliness and neatness; and the brass-work of the taps, and the pans and iron-work of the kitchens were deserving of high praise for their brightness. The only drawback from one's admiration of the entire house was the feeling that such conveniences were often not to be found in average houses, especially if twenty years old or more; and that such cleanliness could not be attained in the average family life of an artizan or a middle-class household, in which children are many and domestic aid is limited. And the feeling involuntarily arose whether such admirable surroundings were the best possible preparation for an artizan's or a labourer's wife, or for a servant-of-all-work in the lower and middle-class ranks of life.

INMATES OF THE COTTAGE HOMES.

All are paupers, between five and sixteen years of age. The "infants," as they are called, *i.e.*, the children under five years old, are left under the nursing care of their mothers if babies, or if older children, or orphans, they are in the *Nursery* of the West Derby Workhouse until they are five years old, when they are removed—whether orphans or not—to its Cottage Homes. If a single parent or a married couple enters the Workhouse with children, those above five years old are sent at once to Fazakerley, and the infants to the Workhouse nursery.

WHAT ACCESS HAVE THE PARENTS TO THE CHILDREN IN THE HOMES?

On a fixed day once a quarter the parents of every child are permitted to go to the Cottage Homes and spend the afternoon with their children, and in case of sickness of either parent or child information is at once sent to the Workhouse or the Cottage Home, and the parent or child is taken to the invalid. Thus they are mutually in the same position as the upper classes of parents whose children have been sent to ordinary boarding or to endowed schools, except that the upper classes see their children twice or three times a year, and the inmates of the Workhouse see theirs once a quarter.

The average number of children in the Cottages is about 600, and the average number for each cottage is 30 under one "mother," or under a married couple, as the case may be. The boys occupy the cottages on one side of the avenue and the girls those on the other; and the boys are under the care of a married couple, who are called their "Foster Parents," and the girls are under a single woman, who is called their "mother."

These children are of various classes, calling for separate and different consideration. About 500 are orphans or deserted children, who are not likely to be taken out of the Homes until the age arrives (sixteen years as a rule) at which they must leave the "Cottages" either to enter upon life in some wage-earning capacity, or as quasi-adult paupers to be removed to the Workhouse. These children—the large majority—may therefore be fairly expected to continue until they are sixteen years old; and as some of them are only five or six years of age when they enter, the period of training will be seven or eight years in most cases. Up to the present time only five years have elapsed, which is too short an experiment to warrant confident assertions as to the ultimate result; but so far it has proved fully as successful as could have been hoped for.

Above 100 are the children of parents in the Workhouse, and they are liable to be removed at any time; for they must be taken away when the parents leave the Workhouse. Parents leaving the House cannot leave their children behind them in the Cottages, whatever may be their object in doing so, whether it may be a real desire for the children's future welfare, or simple indifference about them, or an evil desire to throw upon the public the care and expense of their bringing up. The Cottage training will, therefore, be short in many of these cases, and its influence cannot be relied upon, though it may be hoped that it will do some good.

About one-third of the children are Roman Catholics, and they introduce a difficulty that is inevitably felt where the conflict of creeds comes into operation. Most of them are from the West Derby Union, but a portion of them are being housed at present in order to relieve the neighbouring Prescot Union, which is, however, providing for them as rapidly as possible, and they will all have left in a couple of years. The Poor Law authorities have also sanctioned the erection of some large schools in Honey Green, West Derby, for Roman Catholics exclusively, to which most of the remainder will shortly be removed, the Guardians paying for the board of the children there, instead of maintaining them at Fazakerley. A limited number (about 40) of Roman Catholic *female* children have been placed under the care of the Sisters of the Nunnery at Pantasaph, near Holywell, where they are trained to be servants, and a still smaller number of Protestant girls are entrusted to a Ladies' Committee at Ambleside, who select and recommend suitable persons to receive the children into their families, so as to bring them up in actual family house life; for each of which 4s. per week is paid by the Guardians, and the ladies undertake to visit them regularly and see how they go on.

FUNDAMENTAL CONCEPTION OF THE WHOLE SYSTEM.

The HOME is the fundamental conception of the whole scheme, and everything is arranged so as to be conducive to carrying it out. The Heads of the Cottages are therefore always called the "Parents" or "Father" or "Mother," *not* the "Master" or "Matron;" and they are to endeavour in every way to carry on the Cottage both in provisioning the children and taking their meals with them, in teaching them home duties and home accomplishments, in entering into their interests whether joys or sorrows, in training them in religion and good conduct, and in punishing them when deserving punishment, as affectionate, careful, and competent parents would do with their own children.

MANAGEMENT OF THE COTTAGES.

The Heads.—The Heads of each Cottage for boys must be a married couple of the respectable artizan class socially, and the "Father" must be a skilled artizan, who is capable of conducting a workshop, and of teaching the boys generally who may be placed in it some handicraft, such as tailoring, shoemaking, joinering, house painting, blacksmiths or plumbing work, or the like. He is the general instructor in his particular branch of training, as well as being responsible for the good discipline and behaviour of the boys in his particular Cottage. His wife is responsible for the general management and cleanliness, &c. of the interior of the house, and the cooking and such other duties as would fall upon the "Mother" in an artizan's or labourer's house. The "Mother" of the girls' cottages as a rule is a widow, and it is preferred by the Guardians that she should not have children, although *one* may not be an absolute bar to appointment; many of the Guardians thinking that personal experience as a Mother of children's needs and dispositions is a qualification of such value as to overbalance the danger of partiality in her treatment of the children under her charge, or of neglecting the others in order to attend to her own.

It will easily be understood that the finding of properly qualified "Foster Parents," especially in the case of married couples, when both husband and wife must possess the requisite important qualifications—is one of the greatest difficulties to be encountered in carrying out such a scheme successfully; and although all the appointments have not been equally successful, the experiment has thus far been so satisfactory as to encourage its continuance.

The "Foster Parents" are not themselves placed under rigid rules of supervision. It has been considered best to trust them largely, and to rely upon their conscientious interest in their work, so far as to intrust them with the liberty that a widowed Mother or a married couple having a large family would naturally have. They have liberty therefore to leave the Home for some hours at discretion without first obtaining the consent of the General Superintendent, and there are two supernumerary "Mothers" in the Establishment having other duties generally, but available for temporary charge of a Cottage during the Mother's absence for a few hours, or for a longer period if ill or away on their yearly holiday. No Cottage must however be left without some one in the position of "Mother" being in it.

SALARY OF THE "FOSTER PARENTS."

The salary is £25 per annum for the "Foster Father," and £20 per annum for the "Mother," increased in each case by £1 yearly, for five years. All clothing except underclothing is also provided, and a private sitting room with every other requisite of daily life is also supplied as part of the remuneration.

RESPONSIBILITIES AND DUTIES OF THE "MOTHERS."

The mother is responsible for the entire management of the cottage under her charge, and for the *home* religious training of the children; for the cooking, and for the *home* tuition of the children. She is not provided with any servant, but she and the children must do everything necessary for the good order, cleanliness, and comfort of the house, and every child must assist, according to its age and ability. If there should be no child in the cottage above thirteen or fourteen years old, she is allowed to have the assistance of a girl from some other cottage for the last twelve months of the girl's residence in the Homes, under the title of "mother's help."

DAILY LIFE IN THE COTTAGE HOMES.

The Protestant children, after making their beds, come down stairs and commence the day, before breakfast, by singing a hymn (generally one of Moody and Sankey's), and saying the Lord's Prayer and responding to another one or two prayers, either selected or extemporised by the Foster parents, who then read a short portion of the New or Old Testament but without comment, the whole occupying about ten minutes; and the day concludes with a hymn (generally "Gentle Jesus") and the Lord's Prayer.

During this morning period, the Roman Catholic children remain in their dormitories, and say their own prayers.

A short period of play follows breakfast, and then school for two or three hours, broken by two or three intervals of a few minutes for fresh air and games in the playground. Then dinner, and again afternoon school; and the day concludes as in the ordinary life of children generally.

The religious difficulty affects these cottages like other schools, as educationists are only too well aware; but by the mutual good feeling and concessions on the part of the superintendent and the priest, no conflicts have occurred.

The Priest comes to the Homes in the afternoon of two days a week, to teach the Catholic children their religion, while his place is taken by a Catholic lady for the benefit of some of them whom she can better influence. On these two afternoons, Protestant children receive from the Chaplain their Scripture lessons and special religious instruction in the large hall, by which arrangement all clashing between conflicting creeds is obviated.

On Sundays, there is a Sunday-school for the children in the large hall, as already mentioned, and two services by the Church of England Chaplain. The services are bright, and the behaviour of the children leaves really little to be desired. There is a choir of about twenty boys and as many girls, and I observed the Superintendent's little son was one of them. The singing, led by an harmonium played by the schoolmistress, was hearty and very general, the hymns being Moody and Sankey's well-known collection; and (there being a high gale of wind that day, difficult even to stand against) one of the hymns selected was "Almighty Father, strong to save." The whole impression was most favourable. The Catholic children go, morning and afternoon, to Gill Moss Church, about a mile and a half distant, unless the weather forbids the little ones, or the delicate ones, from going so far.

Industrial Training of the Children.

The girls are taught not only household work, but also sewing, knitting, darning and laundry work—and in going through their play-rooms in the Cottages when they were not in active play but in tranquil employment I found one big girl teaching a little one how to turn the heel of the stocking that the child was knitting with its four needles, and other children were doing both plain and fancy needle work. The latter is encouraged as a recreation and a training in something above the level of pauper life, while the former is insisted upon so far that they may be able to make all their under clothing at any rate, though they may not be advanced enough to shape a pattern, or cut out their dresses.

The boys are taught a great variety of handicrafts so as to teach them the general use of their hands, and prepare them for employing them to a useful extent if they should ever become emigrants. The tailors' shop and the shoemakers' are apparently the most popular, though the number of boys in each probably arose from the fact that all their clothes are home-made, a Master Tailor being there to cut out, and teach them the needle and pressing part of the business. The Shoemaker teaches both the stitching and nailing and also the cutting out, according to the wholesale patterns in use in the manufactories. The other shops that I inspected were the plumbers', where a boy soldered a tin can quickly and well—the joiners' shop where I saw some creditable work done by the boy then in the shop, in planing, squaring, and sawing. I also visited the painters' workshop and the bricklayers' for repairing a damage, and the bakehouse. I saw boys in the field and others in the garden; but *one* shop I did not see, though it is a useful one in real life, viz. the barbers'—one of the "Foster Fathers" being a hairdresser by trade. No attempt is made to make the boys skilled and thoroughly accomplished artizans in any of these trades, but, as emigrants, many of them could make a capital work-a-day suit of clothes, or shoe his baby's little foot, or make the cradle for it before its arrival, and also the cabin furniture for his first log hut; and with a good box of tools he would soon have a house with comforts of his own making, with which he would be pleased and proud.

INTELLECTUAL TRAINING OF THE CHILDREN.

The little ones have a good Kindergarten School, and sang for me more than one capital action-song, besides the exhibition of very creditable ordinary school work.

The Inspector's Report of the schools generally was a a favourable one, and 95 per cent. passed his examination.

GYMNASTIC AND ATHLETIC TRAINING.

There is a well supplied gymnasium as far as the requirements for boys generally render necessary; and their out door sports of foot ball, cricket, and leap frog, &c., are carried on as boys usually do practice them. The last game, and running races, I saw in operation, and nothing more could be desired than the manner in which they were carried out. Wrestling is not a Lancashire agricultural game, and boxing is generally speaking only cultivated in the absence of a master or visitor, and I confess that I looked in vain for a black eye. Great stress is laid upon *swimming*, every boy being urged although not absolutely required to gain skill in that accomplishment; and the swimming bath is a large and excellent one in every respect, and is always heated to 70° F. when used in the cold months of the year, the class of boys in the Homes not having always physical vigour to bear perfectly cold water with safety.

FEEDING THE CHILDREN.

Every child has as much as it can eat; and "Oliver asking for more" would at once have more, and would not appal the foster parent by the request. The dietary scale is not "so much" weight or measure per child's age, but so much per measure by the child's appetite. It contains animal food, green vegetables and potatoes cooked in a variety of ways, according to the "mother's" taste and judgment. Each cottage makes its daily return to the Superintendent's office of the dietary for the day, and the following are taken at random from a pile of returns placed in my hands:—

	Breakfast, 7-45 a.m.	Dinner, 12-30 p.m.	Supper, 5 p.m.
Cottage No. 3.	Cocoa, bread and dripping.	Roast meat, potatoes & turnips, plum pudding.	Tea, bread and butter.*
" " 17.	Hot milk, bread and butter.	Beef, & mashed turnips and bread, rice pudding.	Tea, bread and butter, and bunloaf.

---

* It might not be safe to vouch that this "butter" was not really "margarine," but it answered as well.

DISCIPLINE.

Theoretically, there is no corporal punishment except under the Superintendent's inspection; but in practice, minor punishment by the cane or a strap is left in the discretion of the Father or Mother, the school-master, or the workshop master; and no one who has had practical experience of a school of boys will deny the necessity and the wisdom of granting such discretion; keeping up, however, a careful watch that it does not merge into excess or cruelty. So far as an outsider can judge from the children's faces and demeanour in several visits to the Cottages, these punishments are not severe or unmerited when inflicted. BIRCHING, however, is a grave and very ceremonial business, and has only been resorted to on the average of 1·5 times per annum since the school has been opened. It is inflicted with great ceremony by the Drill Master, in the presence of the Superintendent, and is recorded in the punishment book, and laid before the Guardians, and is only administered for absconding from the school, or inciting another boy to abscond, or for deliberate lying, or swearing or some grave offence—and the tradition of the school is that it is "no joke."

For the first year of the Homes it was absolutely forbidden; but the Homes and surrounding grounds not being enclosed by walls that an average street Arab could not find means of scaling, it was found that new boys constantly revolted against the absence of freedom, and continually escaped within the first day or two, returning to their old haunts and friends. So that two special officers had to be in continual search for these waifs and strays, and were sometimes days before they could find them. There was no punishment that was influential—for solitary confinement, *i.e.*, imprisonment in a cell—was worse than useless with such boys, and privation of food only aggravated the already depressed condition of the boys morally and physically. The Superintendent, therefore, after many fruitless endeavours, at length succeeded in persuading the Guardians to intrust him with the power of the rod for absconding, or very grievous offences; and the next little culprit in this respect was accordingly invited to an interview with him and the Drill Sergeant, and the news of its result flew like wildfire through the school; and "the master's got a rod and has flogged Tommy" was passed from mouth to mouth in hushed tones of awe. After this, however, it was months before another boy absconded; and the knowledge of its existence has made the rod an almost unused mode of persuasion since then; and it has only been used six times during the four years of its existence.

Approximate Cost of the Institution Generally.

Original outlay in purchasing the land, building and furnishing the cottages, etc., making the roads, and other work necessary before the experiment of the Homes could be commenced—£86,000.

This amount is to be paid off in thirty years, after which the Homes will have become a free gift from the present to the next generation of ratepayers of the West Derby Union. The payment of interest, and repayment of borrowed capital, amount to, per annum ... £5,019

Establishment charges	2,492
Salaries, including rations, and other allowances of officers	3,991
Cost of maintenance of 600 children ... ... (average per child, 4s. 4¼d. per week)	6,164
	£17,666

At the end of the thirty years, this annual expenditure will be reduced to £12,664, and the apparent cost of the experiment will be so far reduced. But it is to be borne in mind that the expenses of an institution on the cottage system can never be brought down to the scale of one upon the so-called barrack system, each cottage requiring a separate head or heads for every thirty children, instead of one head for, say, one hundred children; and twenty detached medium-sized houses, requiring more expenditure in maintenance and repairs than one or two large barrack houses.

The difference of system will therefore always involve a difference of expense, to the apparent disadvantage of the detached houses; and it is for future experience to prove whether the moral and social results of the cottage system are so superior to those of the barrack system as to make the increased expenditure a desirable, and, in commercial language, "a paying outlay."

Results.

They have been favourable so far as five years' experience can warrant the expression of an opinion, and they are an encouragement to the Guardians to continue their scheme. The number of children who have left for various situations has been considerable; and while a few have been returned as unsuited for the situations, or the situations as unsuited for them, several even of these have been placed satisfactorily in other situations, and *only about five per cent. have proved hopelessly incapable or unwilling to do better, or have otherwise gone to the bad.* When the children leave the Homes to go to situations they are provided with a complete outfit of clothing of a suitable character for the situation they are going to, and sufficient in quantity to last a full year, or longer still with care. The following table shows the manner in which they have been disposed of from March, 1887, the date of opening the Homes, to December 31, 1893:—

TOTAL NUMBER SENT OUT, 332. BOYS, 194; GIRLS, 138.

	BOYS.	GIRLS.	TOTAL.
Sent as Emigrants to Canada*	70	23	93
„ „ Domestic Servants	—	38	38
„ to Pantasaph R. C. Orphanage†	—	43	51
„ to West Derby R. C. Orphanage†	—	8	
„ to Ambleside Homes—brought up for Home life in various fashions	—	8	8
„ to Grimsby as apprentices to the fishing trade‡	24	—	24
„ to Collieries as Harriers §	59	—	59
„ to factory work, weaving, spinning, stocking knitting ‖	5	18	23
„ to training ship *Indefatigable*	13	—	13
„ to farmers, 8, gardeners, 4	12	—	12
„ to office work	5	—	5
„ to various trades: shoemakers, 2; dairyman, 1; cabinet maker, 1; chimney sweeper 1	5	—	5
„ to the Army, only a single boy	1	—	1
	194	138	332
Of the above their relatives took away	12	10	22
	182	128	310
Of this number some have been returned to the Cottage Homes for various reasons, such as insuitability of the child for the situation, or of the situation for the child	16	8	24
	166	120	286

Total 286 satisfactory = 92·2 per cent.

---

* At the present time about 18 boys are sent out yearly.

† All the children at these Orphanages are brought up to be domestic servants.

‡ The boys sent to the fishery go on a month's probation at first, and after

This result of a five years' experiment may fairly be considered encouraging.

"COLONY OF METTRAY," TOURS, FRANCE.

A scheme strikingly resembling that of the Fazakerley Cottage Homes was devised and brought into successful operation in 1839 at Mettray, near Tours, about thirty-five miles from Orleans, in France, by the Comte de Metz, a retired Judge of Appeal in France, and his college friend Baron Brétignières de Courcelles, from their own private resources in the first instance, but afterwards aided by help from their friends. Its history and progress are full of interest, and were very briefly sketched to the Literary and Philosophical Society at the conclusion of the foregoing paper; but they would require a paper to themselves if given *in extenso*. This "Colony of Mettray," as it is called, has been the origin apparently of the various schemes of Cottage Homes that have been brought into operation in this country of late years.

A detailed account of the origin and progress of this "Mettray Colony" may be found in Cates's *Dict. Gen. Biog.*, article "De Metz Fred. Aug."; and in the volume of official papers relating to it in the Liverpool Free Library, heading "Mettray Colony," or "De Metz"—Mettray Colony.

that they either remain or return to the Cottage Homes, according to their own wishes or the judgment of their captains.

§ The boys sent to the collieries for such work as they are best fitted for are from time to time visited by the Guardians or by some person deputed by them.

|| The girls who were sent to some special factories in Yorkshire and in Wales were received by the principals of the factories and placed in homes carefully provided for them. They have now been withdrawn, as there is such a demand for them as domestic servants as to make it preferable to place them in situations rather than factories.

LIVERPOOL:
D. MARPLES AND CO.,
LORD STREET.

Stanford University Libraries
3 6105 124 460 382

062 Literary and philosophic
L776 Proceedings. 271425,

NAME	DATE	NAM	

271425